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INDIVIDUAL, SOCIAL AND ENVIRONMENTAL PREDICTORS OF PHYSICAL ACTIVITY IN SEVERE TO MORBID OBESE AFRICAN AMERICAN ADOLESCENTS

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ABSTRACT

The purpose of this study was to predict low, moderate, hard and very hard physical activity (PA) and walking/biking/jogging based PA. One-hundred and fifty-nine severe to morbid obese African-American adolescents participated. We predicted 8% of the variance in hard PA largely due to family support and 10% of the variance in very hard PA due to other support (e.g. counselor) and having home PA equipment. We also predicted 10% of the variance in walking/biking/jogging due to the walkability of the neighborhood. Our findings support the value of social support and environmental supports in helping obese African American adolescents increase PA.

Keywords: health; self-esteem; adolescents; obesity; minority

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INDIVIDUAL, SOCIAL AND ENVIRONMENTAL PREDICTORS OF PHYSICAL ACTIVITY IN SEVERE TO MORBID OBESE AFRICAN AMERICAN ADOLESCENTS

Obesity is a major health issue leading to the existence of co-morbid conditions, reduced quality of life, and premature death. Obesity is especially prevalent in African Americans (Ogden, Flegal, Carroll, & Johnson, 2002). In particular, African American adolescents have higher rates of overweight and obesity relative to Caucasian children (Crawford,

Story, Wang, Ritchie, & Sabry, 2001; Gomez, Johnson, Selva, & Sallis, 2004; Gordon-Larsen, McMurray, & Popkin, 2000). Obesity and sedentary behavior also represent almost 10% of the USA national health care costs and the direct costs of no physical activity (PA) are estimated at 24 billion dollars (Colditz, 1999).

PA is a potentially important mechanism to both reduce and prevent obesity (Goran, Reynolds, & Lindquist, 1999). Unfortunately African American adolescents do not meet national standards for moderate to vigorous PA (Wong et al., 2012). Given the recent increase in overweight and obesity and the lack of PA among African American adolescents, there has been heightened interest in understanding the antecedents of PA. The beneficial outcomes of PA, in addition to obesity prevention are well documented and include cognitive (e.g. enhanced neurocognitive function), emotional (e.g. reduced stress), social (e.g. increased social support) and physiological (e.g. reduced heart disease) benefits (Friedenreich & Orenstein, 2002; United States Department of Health and Human Services: USDHHS; 2000). However, not all types and forms of PA are equally beneficial as there appear to be differential benefits associated with varying levels of PA intensity. For instance, African American adolescents with higher levels of vigorous PA have demonstrated stronger cardiovascular fitness (CF) and lower body fat percent compared to individuals with lower vigorous PA (Gutin, Yin, Humphries, & Barbeau, 2005). In contrast, moderate intensity PA was much more weakly related to CF (Gutin et al., 2005). Moderate-vigorous PA, relative to light PA, is also associated with a greater reduction in cardiometabolic risk factors in Canadian youth (Carson et al., 2013). Moderate to vigorous PA is also associated with greater cognitive benefits compared to lighter intensity PA (Castelli, Hillman, Hirsch, Hirsch, & Drollette, 2011). Researchers have also shown that light PA is unrelated to mortality whereas moderate PA has trended towards lower mortality with vigorous PA predictive of mortality (Lee & Paffenbarger, 2000).

Although the evidence suggests that moderate-vigorous PA compared to light intensity PA produces greater physiological, cognitive and health benefits there are some drawbacks to vigorous PA. People are often reluctant to engage in hard and very hard PA because of the discomfort associated with such efforts. High intensity PA can induce negative mood states and fatigue and serve to reduce future PA engagement (Pronk, Crouse, & Rohack, 1995). In contrast, low to moderate PA can result in reduced feelings of fatigue post-exercise (Loy, O'Connor, & Dishman, 2014) and promote positive affect (Hall, Ekkekakis, & Petruzzello, 2002). Given the high rates of obesity and the low rates of PA in obese African American adolescents, and the differential benefits of PA intensity, it is important to determine the antecedents of light, moderate, hard and very hard PA and if they vary (Yancey, Ory, & Davis, 2006).

Social cognitive, ecological, and personality theories have been employed to understand PA antecedents among non-obese African American adolescents (Martin & McCaughtry, 2008; Martin, McCaughtry, Shen, Fahlman, Garn, & Ferry, 2012). However, to our knowledge similar research has not been conducted with obese African American adolescents. To address this research gap, we sought to determine which social cognitive and ecological theory based constructs, classified as individual, social, or environmental variables, would best predict low, moderate, hard and very hard PA. Furthermore the limited research examining predictors of PA in African American adolescents has typically been cross-sectional in nature hence the current study is longitudinal in design.

We examined two individually based constructs. We first examined hope (Snyder, Sympson, Ybasco, Borders, Babyak, & Higgins, 1996). As defined by Snyder et al. (1996) individuals high in hope have important goals and persevere in their efforts to obtain their goals by developing plans and strategies. Possessing high levels of hope is similar to having strong self-regulation skills which should aid adolescents in their efforts to engage in PA. We also examined self-efficacy given its long history of research support in many domains (e.g. sport, education, etc.) and in particular weight loss (e.g. Warziski, Sereika, Styn, Music, & Burke, 2008). Individuals with strong self-efficacy for engaging in PA are more likely to develop strategies to fit PA into their day, to work harder and longer, and seek social support for PA compared to individuals with weaker self-efficacy. We hypothesized that individuals expressing stronger hope and efficacy would engage in more PA, at all levels of intensity, compared to individuals with weaker hope and efficacy.

Social support from both family and friends are important antecedents of PA for children in general (Duncan, Duncan, & Strycker, 2005) and in particular for obese youth (Murtagh, Dixey, & Rudolf, 2006). Therefore, we examined multi-dimensional social support by obtaining data on friend, family and other social support for PA. We hypothesized that participants reporting greater social support from all three sources would be more physically active at all intensity levels than participants experiencing weaker social support.

Participants in the current study were from a major city where poverty and unsafe neighborhoods are particularly salient barriers to PA (McCaughtry, Barnard, Martin, Shen, & Hodges Kulinna, 2006). For many obese individuals walking is a convenient, inexpensive, and preferred PA and countries with the highest rates of active transportation (e.g. walking, biking) have lower rates of obesity compared to countries with lower rates of active transport (Bassett, Pucher, Buehler, Thompson, & Crouter, 2008). Hence, we assessed participant's perceptions of the walkability of their neighborhood. Additionally we assessed home PA equipment as another feature of the environment given that home exercise equipment facilitates engaging in short bouts of PA (Jakicic, Winters, Lang, & Wing, 1999). We hypothesized that participants who viewed their neighborhood as facilitative of walking and who had PA equipment in the home would engage in more PA compared to participants reporting less PA equipment in the home and who perceived their neighborhood as less walkable. Participants in the current study were too young to drive and lived in a city with limited and unreliable public transportation. Hence, they often walked or biked for functional reasons (e.g. going to the store or school). The neighborhood walkability scale (NEWS; Saelens, Sallis, Black, & Chen, 2003) we employed has received limited use in urban environments and with obese African American youth. Additionally, the rationale for the NEWS is that PA friendly neighborhoods are more likely to promote lifestyle PA such as walking, biking and jogging. A PA friendly neighborhood is thought to have limited influence on PA such as traditional sports played at school or exercise done in the home. Hence a secondary purpose of the current study was to determine if participant's perceptions of the PA walkability of the neighborhood specifically predicted walking, biking and jogging PA.

In summary, we sought to predict various levels of PA intensity and walking/biking/jogging PA using individual, social and environmental based constructs to determine which ones are important in predicting PA.

METHOD

Procedures

We received permission from the University Internal Review Board, parents, and children to conduct our study. Participants' parents completed informed consent forms whereas participants provided assent. A team of data collectors met with participants to obtain psychosocial and ecological data at the study start. Our outcome measures (i.e., low, moderate, hard, very hard PA, and walking/jogging/biking PA) were obtained approximately 1, 7 and 9 months later at Times 1, 3 and 4.

Participants and Setting

Complete data on sample of 159 severe to morbid obese African American adolescents (*M* years = 13.8, *SD* = 1.6) from a major city in a Midwestern state in the United States (U. S.) participated. Our participants resided in a city that recently declared bankruptcy and is facing a significant economic depression (U. S. Census Bureau, 2008) as thirty-eight percent of the city residents live below the poverty level (U. S. Census Bureau, 2008). Approximately two-thirds of our participants were girls (*n* = 107) and the rest boys (*n* = 52). Participants had an average height of 65 inches (*SD* = 2.68, range = 58–73 inches) weight of 104.33 kilograms (*SD* = 23.65, range = 63.77–205.25), 58.9 percent body fat (*SD* = 106.5, range = 29.7–65.6), and a BMI of 38.2 (*SD* = 7.64, range = 25.7–60.5), which placed them in at the 98.9th percentile. BMI was calculated as weight in kilograms divided by height in meters squared and rounded to the nearest tenth (Flegal, Kit, Orpana, & Graubard, 2013). Using the standard formula of height and weight BMI's of greater than 35 and 40 are often referred to as severe or morbid obesity (Sturm, 2007). BMI's over 35 are also referred to as Grade 2 obesity (Flegal, Kit, Orpana, & Graubard, 2013).

Participants were part of a weight loss intervention study (Naar-King et al., 2014). Originally, 186 families enrolled in the trial but five were removed from the study, for a sample of 181 families. The current sample of 159 includes those who completed their follow-up data collection. Families were randomized between receiving the intervention at home or at the physician's office. Furthermore, children were also randomized across three types of weight loss intervention treatments.

Instruments

Demographic scale. The demographic information provided by adolescents included their age, gender, and ethnicity.

Individual Measures.

Hope Scale. The State Hope Scale (Snyder et al., 1996) is an 8 item scale. An example item is "I can think of many ways to reach my current goals." Scores range from 1 (definitely false) to 8 (definitely true). Adequate reliability and validity has been established (Curry & Snyder, 2000; Curry, Snyder, Cook, Ruby, & Rehm, 1997; Snyder et al., 1996).

Efficacy. We used a 5 item adolescent self-efficacy to change adapted from Rollnick's Readiness Ruler (Stott, Rollnick, & Pill, 1995). Items were tailored to the behaviors most

critical to physical activity (e.g. how sure are you that you can set aside time for regular physical activity. Items were scored from 1 to 10 and summed and divided by 5 to obtain a mean efficacy score. Higher values indicated higher efficacy to change. The original scale has demonstrated reliability and validity with minority youth with chronic conditions (Ellis, Berio, Idalski-Carcone, & Naar King, 2001; MacDonell, Naar-King, Murphy, Parsons, & Harper, 2009).

Social Measures.

Social Support Scale. Participants responded to the following, "Exercising may sometimes be easier with support from other people. We want to know who supports you in your efforts to exercise. Who are your supports? List the names of the people who support you in increasing the amount you exercise" List up to 6 different individuals and their relationship to you. Three social support scores ranging from 1 to 6 were then determined for friends, family and other (e.g. teacher, counselor, religious leader, coach).

Environmental Measures.

Neighborhood Environment Walkability Scale (NEWS). The NEWS was designed to examine neighborhood environmental factors that are important to physical activity (Saelens, Sallis, Black, & Chen, 2003). The NEWS has 72 items across 8 subscales. Because the current study was part of a larger project we sought to reduce subject burden. As a result we often dropped the weakest performing items (Saelens et al., 2003) from various subscales. The first subscale, residential density (6 items), assesses the type of residences in participant's neighborhood. The second subscale, land use mix-diversity (23 items), assesses how long it takes people to walk from their home to common business's or facilities (e.g. fast food restaurant, post office). We added an additional item representing a popular local chain restaurant often used by our participants. This resulted in a 24 item subscale. The third subscale, land use mix access (7 items) reflects respondent's perceptions about how easy it is to walk in their neighborhoods. We eliminated one item that was not relevant for our sample resulting in a 6 item sub-scale. The fourth subscale, street connectivity (3 items, reduced from the original 5 items as 2 items were not relevant, measures street connectivity (e.g. alternative routes from place to place). The fifth subscale, walking/cycling facilities, measures how easy it is to walk or jog and bike ride in the neighborhood and we used 3 of the 5 original items. The sixth subscale measures the aesthetics of the neighborhood (e.g. interesting things to see) and we used 4 of the 6 original items. The seventh subscale, pedestrian/traffic safety, reflects perceptions of neighborhood safety (e.g. well lit streets) and uses 4 items. The eight and last subscale, safety from crime, has 6 items and we used 5 items. For subscale one, residential density, respondent's indicate how long it takes them to walk to various places by checking one of 5 boxes with time ranges (i.e., 1–5 minutes to 30 plus minutes). Higher scores indicate further proximity, a longer time to walk, and therefore lower perceived walkability. All remaining subscales are answered according to a 1 (strongly disagree) to 4 (strongly agree) point Likert scale. Higher scores indicate greater walkability. Adequate reliability and validity has been established (Cerin, Conway, Saelens, Frank, & Sallis, 2009; Saelens et al., 2003). Finally it should be noted that the caregivers and not the adolescents completed the NEWS.

Physical Activity Equipment in the Home (PAEH). The PAEH was designed to assess the prevalence of physical activity in the home (e.g. jump rope) (Rosenberg et al., 2010). The PAEH list 14 common pieces of PA equipment that respondents answer with a yes or no to indicate its presence or absence in the home. The scale is scored by summing the yes answers and scores range from 0 to 14. Higher scores indicate more PA equipment in the home. Adequate test-retest reliability and construct validity have been established (Rosenberg et al., 2010).

Outcome Measures.

Physical activity (PA). We obtained measures of light, moderate, hard and very hard intensity physical activity (PA) using the 3-day Physical Activity Recall Instrument (3DPAR) developed by Pate, Ross, Dowda, Trost and Sirard (2003). At Times 1, 3 and 4 participants recalled their PA engagement over the last 3 days in 30 min blocks of time starting at 7 am and ending at midnight. Fifty-five common activities are supplied that reflect activities related to school, work, sport, hobbies, eating, transportation, etc. For each 30 minute segment respondents enter the main activity they did during that time and rate its intensity as light, moderate, hard or very hard (Pate et al., 2003). Each 30 minute time period is assigned a MET value. Further data reduction results in a MET value for each of the 3 days which is totaled for the 3 day period. Based on MET values, activity is categorized as light, moderate, hard or very hard. PA data was obtained at Times 1, 3 and 4 and averaged across the three time periods to obtain the most representative measure of PA possible based on 9 days (i.e., 3 days from each period). Criterion validity and factorial invariance has also been established for the 3DPAR (Pate et al., 2003).

Data Analysis

The Statistical Package for the Social Sciences 22.00 was used for all analyses. We first examined for missing data and then tested for multicollinearity, skewness and kurtosis. Internal reliability via alpha coefficients (where relevant) and descriptive analyses were then conducted. Our major set of analyses, a series of 5 multiple regression equations, were then conducted. In all analyses we entered predictor variables in three blocks representing 3 models. For the first model we entered the individual level variables (i.e., hope, efficacy). The second model then included the individual variables followed by social level variables (i.e., friend, family and other support). Finally the third model included the prior individual and social variables and added in the environmental level constructs (i.e., neighborhood walkability, home PA equipment). This analytical strategy was designed to see what level and which particular constructs within each level accounted for significant variance in our outcome variables. Finally, given the dearth of research in this area it was determined that making a Type II error would be more serious than making a Type I error (Franks & Huck, 1986). Therefore a p value of 0.10 was selected for determining statistical significance. Additionally we believe that effect size (i.e., variance accounted for) is of value and should not be dismissed simply because $p > 0.05$ (see Cohen, 1994).

Preliminary Analyses

A missing value analysis with SPSS indicated that no variables had more than 5% or more missing values and mean substitution was then used. Means, SDs, kurtosis, skewness and alphas were then computed for each subscale (see Table 1). Five NEWS subscales had very poor internal consistency ($\alpha = 0.05$ to 0.41) and were not retained for future analyses. Subsequent analyses using the NEWS was based on the mix-diversity subscale ($\alpha = 0.95$), aesthetics of the neighborhood subscale ($\alpha = 0.77$) and the safety from crime subscale ($\alpha = 0.87$).

Table 1. Means, Standard Deviations, Ranges, Skewness, Kurtosis, Alpha's and Pearson Product-moment Correlations for all Predictor Variables

Variable	1	2	3	4	5	6	7	8	9
1. Hope	–								
2. Efficacy	0.10	–							
3. Family SS	0.03	0.00	–						
4. Friend SS	0.01	0.17	–0.16	–					
5. Other SS	0.09	–0.05	–0.20	0.04	–				
6. News A	–0.18	0.04	0.15	0.11	–0.09	–			
7. News B	0.33	0.16	–0.03	0.04	0.03	–0.12	–		
8. News C	0.35	0.17	0.02	–0.01	0.05	–0.11	0.51	–	
9. Home PA	0.07	0.04	0.14	0.04	–0.09	0.20	0.02	–0.09	–
Mean	5.98	6.96	2.65	0.77	0.31	3.38	2.83	2.59	4.80
SD	1.42	1.76	1.49	1.07	0.74	0.64	0.72	0.74	2.71
Skewness	–0.97	–0.67	0.24	1.36	4.04	–0.74	–0.28	–0.12	0.57
Kurtosis	0.78	–0.11	–0.64	1.11	23.70	0.48	–0.82	–0.81	0.69
Alpha	0.78	0.71	NA	NA	NA	0.95	0.77	0.87	NA

Note. Family SS = Family Social Support; Friend SS = Friend Social Support; Other SS = Other Social Support; News A = Mix-Diversity; News B = Aesthetics of the Neighborhood; News C = Safety from Crime; Home PA = Physical Activity Equipment in the Home. All correlations at $r = 0.16$ or above are significant at $p < 0.05$. NA = one item scales.

Descriptive Statistics

Descriptive data for all predictor variables and internal consistency (i.e., Cronbach's alpha; Cronbach, 1951) can be found in Table 1. Skewness ranged from −0.97 to 4.04 and kurtosis from −0.82 to 23.70. With four exceptions skewness and kurtosis values fell between −1.0 and +1.0 indicative of normality. Furthermore, with large samples slight deviations from normality do not make significant differences in analyses (Tabachnick & Fidell, 2001, p. 74).

For individual level constructs our participants expressed moderate levels of hope and self-efficacy as they scored approximately 6 and 7 on 8 and 10 point scales, respectively. For social support participants noted far more family members ($M = 2.75$ compared to friends ($M = 0.77$) and other ($M = 0.31$). For the environmental constructs we examined walkability dimensions of the neighborhood and PA equipment in the home. The most common type of equipment reported was a bike by 64% of the participants. Basketball hoops and jump ropes, sports equipment, roller skates, yoga mats, and weight lifting equipment were found in less than half of the homes. Less than 20% of the participants had a play, recreation or exercise room, fixed play equipment (e.g. swing set), a swimming pool, trampoline, or water or snow equipment. Participant's mean scores ($M = 3.38$) for residential density (e.g. how close or far away stores and parks were) indicated an average ranging from 11 to 30 minutes. Participants answers about the aesthetics of the neighborhood indicated that they "somewhat agreed" that their neighborhood was attractive and interesting. Finally, safety from crime subscale scores were in the neutral range suggesting mixed opinions about how safe, as a group, our study participants perceived their neighborhood.

Correlational and Regression Analyses

We next conducted a correlation analyses found in Table 1 followed by our multiple regression analyses found in Tables 2 to 4. Before conducting our multiple regression analysis we tested for multicollinearity. Both tolerance (0.68–0.94) and variance inflation factors (1.08–1.47) were acceptable as tolerance values were not under 0.10 and the VIF was not over 10. Additionally, participants were part of a larger randomized control trial so we conducted ANOVA's to determine if PA at Time 1, 3, and 4 varied across intervention type and intervention location. METs for Time 1 ($F (2, 178) = 0.62$, $p < 0.54$), Time 3 ($F (2, 178) = 0.21$, $p < 0.81$) and Time 4 ($F (2, 178) = 1.72$, $p < 0.18$) did not vary according to intervention type. METs for Time 1 ($F (1, 179) = 1.2$, $p < 0.28$), Time 3 ($F (1, 179) = 0.01$, $p < 0.98$) and Time 4 ($F (1, 179) = 3.02$, $p < 0.08$), also, in general, did not vary according to intervention location. As a result we did not control for intervention location or type in the multiple regression equations.

The first two regression equations predicting low and moderate PA were not significant. The third equation, for hard PA, was significant for model two ($F (5, 153) = 1.96$, $p < 0.09$)* which included the individual and social level constructs only. The fourth regression, for very hard PA, was significant for model three including all three levels ($F (9, 149) = 1.92$, $p < 0.05$). The last regression equation predicting walking, biking and jogging was significant for model three ($F (9, 149) = 1.82$, $p < 0.06$)* which included individual, social and environmental level constructs.

Results for the model summary with R, R^2, R^2 change, F change, and significance of F change can be found in the top portion of Tables 2, 3 and 4 and the bottom part of each Table includes standardized Beta coefficients, t's and significance levels for each construct within each block. Based on significant beta-weights our results varied according to the type of PA behavior examined. We predicted 8% of the variance for hard PA with only family support at the social variable level having a significant beta weight. For very hard PA we accounted for 10% of the variance with both other support from the social construct level and home equipment from the environmental level being the most important predictors

based on their significant beta weights. Last, we accounted for 10% of the variance in walking, biking and jogging with the NEWS subscale of mixed diversity land use having the only significant beta-weight.

Table 2. Multiple regression results predicting Hard Physical Activity:

Model Summary

Step	Variable	R	R^2	F	*df*	*p* <	ΔR^2	F change	Sig of F change
1	IND	0.10	0.010	0.77	2.156	0.463	0.010	0.77	0.463
2	SOC	0.25	0.060	1.96	3.153	0.088*	0.050	2.73	0.046*
3	ENV	0.28	0.080	1.45	4.149	0.171	0.021	0.84	0.505

Note. IND = Individual Level Constructs; SOC = Social Level Constructs; ENV = Environmental Level Constructs; Or filter your current search.

Coefficients for Final Model Individual and Social Constructs only

Step	Variable	Standardized Beta	t	Significance
1	Hope	0.072	0.91	0.362
	Efficacy	0.059	0.74	0.460
2	Family SS	0.155	1.91	0.058*
	Friends SS	–0.120	–1.48	0.141
	Other SS	0.128	1.58	0.115

Note. Step 1 = Individual Level Constructs; Step 2 = Social Level Constructs; Family SS = Family Social Support; Friend SS = Friend Social Support; Other SS = Other Social Support.

Table 3. Multiple regression results predicting Very Hard Physical Activity:

Model Summary

Step	Variable	R	R^2	F	*df*	*p* <	ΔR^2	F change	Sig of F change
1	IND	0.08	0.006	0.51	2.156	0.603	0.006	0.51	0.603
2	SOC	0.25	0.063	2.07	3.153	0.072*	0.057	3.10	0.029*
3	ENV	0.32	0.104	1.92	4.149	0.053*	0.041	1.68	0.157

Note. IND = Individual Level Constructs; SOC = Social Level Constructs; ENV = Environmental Level Constructs; Or filter your current search.

Coefficients Final Model with Individual, Social and Environmental Constructs

Step	Variable	Standardized Beta	t	Significance
1	Hope	0.048	0.551	0.582
	Efficacy	0.077	0.952	0.343

Step	Variable	Standardized Beta	t	Significance
2	Family SS	0.060	0.731	0.466
	Friends SS	0.033	0.411	0.681
	Other SS	0.252	3.156	0.002*
3	Home PA	0.166	2.047	0.042*
	News A	−0.065	−0.792	0.430
	News B	−0.039	−0.420	0.675
	News C	−0.090	−0.955	0.341

Note. Family SS = Family Social Support; Friend SS = Friend Social Support; Other SS = Other Social Support; News A = Mix-Diversity; News B = Aesthetics of the Neighborhood; News C = Safety from Crime; Home PA = Physical Activity Equipment in the Home.

Table 4. Multiple regression results predicting Walking, Biking & Jogging:

Model Summary

Step	Variable	R	R^2	F	*df*	*p* <	ΔR^2	F change	Sig of F change
1	IND	0.06	0.004	0.28	2.156	0.755	0.004	0.28	0.755
2	SOC	0.18	0.033	1.04	3.153	0.395	0.029	1.54	0.205
3	ENV	0.32	0.099	1.82	4.149	0.068*	0.066	2.74	0.031*

Note. IND = Individual Level Constructs; SOC = Social Level Constructs; ENV = Environmental Level Constructs; Or filter your current search.

Coefficients Final Model with Individual, Social and Environmental Constructs

Step	Variable	Standardized Beta	t	Significance
1	Hope	−0.063	−0.732	0.466
	Efficacy	−0.009	−0.113	0.910
2	Family SS	0.005	0.059	0.953
	Friends SS	−0.102	−1.262	0.209
	Other SS	−0.117	−1.458	0.147
3	Home PA	0.108	1.326	0.187
	News A	0.207	2.508	0.013*
	News B	0.082	0.884	0.378
	News C	0.056	0.594	0.554

Note. Step 1 = Individual Level Constructs; Step 2 = Social Level Constructs; Family SS = Family Social Support; Friend SS = Friend Social Support; Other SS = Other Social Support; News A = Mix-Diversity; News B = Aesthetics of the Neighborhood; News C = Safety from Crime; Home PA = Physical Activity Equipment in the Home.

DISCUSSION

The major purpose of this investigation was to predict various levels of PA intensity in severe to morbid obese African American adolescents using individual, social and environmental level constructs. We were also particularly interested in predicting some of the most common forms of PA (e.g. walking) engaged in that we hypothesized would be related to positive perceptions of neighborhood walkability.

Both regression equations for light and moderate intensity PA were not significant and failed to support our hypotheses. In contrast, the regression equations for hard and very hard intensity PA were significant. For hard PA the individual level block of variables was not significant but when the social level variables were added the equation became significant and accounted for 8% of the variance. Adding the environmental level constructs did not result in a significant regression equation. The only significant beta weight was family support. The positive beta weight indicates that participants who had more family members supporting them engaged in harder PA than participants reporting less family member support. The finding that family support was the only significant predictor of hard PA is consistent with research on middle school children where Hsu and colleagues found that family support was the only significant predictor of moderate to vigorous PA in mostly Latina female middle school students (Hsu, Chou, Nguyen-Rodriguez, McClain, Belcher, & Spruijt-Metz, 2011).

For very hard PA the individual level block of variables was not significant but when the social level variables were added the equation became significant and the addition of the environmental constructs was also significant accounting for 10% of the variance. The two significant beta weights were other support from the social level constructs and home equipment from the environmental level block of variables. These findings indicate that participants with the strongest other social support and who had the most PA equipment at home engaged in the most very hard PA. For many participants the most common sources of other support were their school teachers, counselors, sport coaches and religious leaders. It may be that highly active individuals were able to engage in very hard PA in two ways: while at home they could rely on easily accessible equipment and when outside of the home they were able to count on significant others outside of their family and friends to help them engage in PA.

The inability to predict light and moderate PA may reflect the ease with which obese individuals, experience feelings of effort and fatigue commensurate with light and moderate PA. For instance, small and common everyday lifestyle PA such as walking from one room to another room in the house or going up the stairs can feel like light and moderate PA. As a result such activities do not require strong self-efficacy, high levels of social support or an environment that is PA friendly. In contrast PA's such as brisk walking (a very common PA for our participants) can produce feelings commensurate with hard and very hard PA for obese individuals relative to non-obese individuals (Ekkekakis, Lind, & Vazou, 2010). Hence, as illustrated in the current study, support from both family members and significant others may be important in helping severe to morbid obese individuals engage in hard and very hard PA that may feel quite physiologically uncomfortable. In addition to the functional support (e.g. encouragement to complete a one mile walk) it is also plausible that family and significant other support is a source of critical emotional support serving to

minimize or alleviate social physique anxiety that might occur in the presence of strangers in more public settings. Obese individuals can be reluctant to engage in PA in settings (i.e., the neighborhood) where social evaluation is high (Zabinski, Saelens, Stein, Hayden-Wade, & Wilfley, 2003). As a result the ability to engage in PA while in the privacy of their home was likely quite important to our participants as substantiated by the significant beta weight associated with the regression equation in which home PA equipment predicted very hard PA.

For the regression equation predicting common outside PA's such as walking, biking and jogging, one neighborhood walkability subscale had a significant beta weight. Participants who viewed stores, businesses, and various facilities as being close if walked to engaged in more walking, biking and jogging compared to participants who viewed the same destinations as being farther away to walk to.

Our participants were too young to drive and lived in a city lacking reliable mass transportation. As a result many of our participants relied on walking and biking to visit friends, shop, get to school, and engage in extra-curricular activities. Hence, it seems reasonable that our participants were more likely to engage in the above PA's if various common locations (e.g. library, stores, park) were close to participants' homes compared to if they were farther away.

In summary, our research study is one of the first to examine constructs spanning individual, social and environmental constructs and their ability to predict various forms of PA. In addition to our comprehensive conceptual framework, our study also makes a unique contribution to the literature in this area by focusing on severe to morbid obese African American youth living in an underserved urban area. Our findings suggest that both family and support from important others (e.g. teachers, extended family, coaches) may be critical determinants in helping obese African American adolescents engage in hard and very hard PA. The amount of variance accounted for in both hard and very hard PA by family and significant others was small based on objective criteria for labeling effect sizes (Fritz, Morris, & Richler, 2012). However, within the context of our participants' who, as a result of their morbid obesity levels, were at risk for many severe health challenges (e.g. heart disease, diabetes) the value of understanding the determinants of even small to moderate amounts of PA behavior is clearly quite important for health and medical reasons. Given the non-experimental design of our study we cannot assert causality but, based on the longitudinal nature of our research and prior research, our findings are supportive of a causal link from social support and features of the environment to PA.

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AN INVESTIGATION OF MAXIMAL HAND GRIP STRENGTH RELATED TO BODY MASS INDEX IN HEALTHY CZECH CHILDREN

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ABSTRACT

Hand grip strength is one of the most important markers in muscle strength assessment for many reasons. However, its maximal value in kilograms is highly dependent on body size, which may misrepresent results, especially among children. Therefore, correction by body mass index (BMI) can be used as a suitable approach for its objectification. The aims of this study were to create reference values for the grip to BMI ratio and for hand grip strength for children in the Czech Republic. 554 children of both genders, aged from 4 to 14 years, were included in the current study. Reference values were approximated by Tukey's Hinges percentiles calculation method. The percentile charts were created using the Lambda-Mu-Sigma (LMS) method.

Keywords: dynamometry; grip to BMI ratio; percentiles; Czech children

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INTRODUCTION

Handgrip strength is extensively used with many intentions in practice, usually for hand function assessment or evaluation of physical performance among different populations from children to the elderly. Many studies have shown that handgrip strength is influenced by many factors. The result of handgrip strength testing is directly affected by neural, muscular and skeletal systems, and it is indirectly connected with one's lifestyle. Handgrip strength is widely used in the evaluation of athletes, general populations and patients suffering from many diseases associated with decreasing muscle strength and function. Measurements of maximal handgrip strength are essential to track changes during growth, maturation, aging, rehabilitation and training trials.

It is known that, in children, a correlation exists between weight, height and handgrip strength (Ager et al., 1984; Newman et al., 1984; Hanten et al., 1999; Rauch et al., 2002;

Ertem et al., 2003; Ertem et al., 2005; Ferreria et al., 2011; Montalcini et al., 2016). Ploegmakers et al. (2013) suggested that weight, and especially height, had a strong association with handgrip strength in school children. Both height and weight are easy to measure and are used as independent variables to calculate body mass index (BMI). Considering the relationship between height, weight, and grip strength, McLean et al. (2014) proposed a grip strength to BMI ratio, which is calculated as handgrip strength divided by BMI, to evaluate the elderly clinical population. Since grip strength is correlated with height and weight in children as well, we were inspired by the suggestion set forth by McLean et al. (2014) and believe that such a measurement may be appropriate for school children. However, reference values of handgrip strength as well as grip to BMI need to be established in the Czech Republic.

The main aims of this study were to create reference values for the grip to BMI ratio and for hand grip strength for children in the Czech Republic.

METHODS

Subjects

554 children of both genders, aged from 4 to 14 years, were included in the current study. All participants that were recruited were visitors of a promotional event series called Sportacek (a programme that encourages children to participate in sports) which took place in five cities in the Czech Republic in 2015. Before testing, the children and their legal guardians were acquainted with the study protocols and legal guardians provided written informed consent. The study was carried out with the approval of the Ethics Committee of the Faculty of Physical Education and Sport at Charles University.

Outcome measures

Body height was measured by a SECA 213 portable stadiometer and weight by a SECA 876 digital flat floor scale. Height and weight were used for BMI calculations. Handgrip strength was measured using a Takei A5401 digital hand grip dynamometer. Testing of handgrip strength was performed with the right and left hand, independently, according to standardized procedures, with the humerus positioned at the side and the elbow flexed to 90 degrees. For each trial, subjects were instructed to squeeze the dynamometer with maximal effort for two to three seconds. Participants performed three successive trials for each hand with a few seconds of rest between each trial. The average grip strength of three trials for the right and left hands were calculated and the strongest side was used for analysis.

Data analysis

Descriptive statistics were used to describe the main characteristics of the participants. A Pearson Chi-Squared goodness of fit test was used to test for equal distribution. The normality of data distribution was tested using the Kolmogorov-Smirnov test. Since the data

were not normally distributed for quantitative variables, the median and interquartile range (IQR) was used for the datasets. To determine significant differences between sexes, the data were compared using two-sample Kolmogorov-Smirnov tests. Reference values were approximated using Tukey's Hinges percentiles calculation method. Percentile charts were created by the Lambda-Mu-Sigma (LMS) method (LMS ChartMaker Pro Version 2.54, Medical Research Council, London, UK) (Cole & Green, 1992). Additionally, a multiple regression model for maximal handgrip strength was performed using height, body mass, and age. All statistical calculations were carried out in the IBM SPSS Statistics 21.

RESULTS

250 girls and 304 boys participated in the study and their descriptive statistics are presented in **Table 1**. The median age for girls was 8 (IQR 5) and was 7 (IQR 3) for boys. The girls were significantly taller and heavier than the boys. Although not significantly different, girls were stronger than boys in handgrip strength; however, boys displayed a greater grip to BMI ratio.

Tukey's Hinges percentiles, which are presented in **Tables 2** to **5**, show that handgrip strength and grip to BMI ratio increased with age in both genders. This is shown also in **Figure 1**. In the multiple regression models, weight had the strongest influence on handgrip strength, while age had the second strongest influence. According to the standardized coefficients Beta, gender played the weakest role in determining handgrip strength. The regression equation for handgrip strength is as follows: handgrip strength = 0.886 · Age + 6.006 · Height + 0.287 · Body mass + 1.269 · Sex − 9.543 (**Table 6**). Regression model for grip to BMI ratio show different results in this case the height was strongest independent variable (Beta = 0.709). The equation was as follows: grip to BMI = 0.055 · Age + 1.408 · Height − 0.009 · Body mass + 0.070 · Sex − 1.209 where age is in years, height in m, weight in kg and girls = 0 and boys = 1 (**Table 7**).

Table 1. Descriptive statistics for the sample population

	Girls	**Boys**	***p* value**
N = 554	250 (44.9)	304 (55.1)	0.019[a*]
Age (yr)	8 (5)	7 (3)	0.001[b*]
Height (m)	1.33 (0.3)	1.30 (0.2)	0.006[b*]
Weight (kg)	28.8 (15.8)	26.7 (12.3)	0.007[b*]
BMI (kg/m^2)	16.5 (2.9)	16.2 (2.1)	0.129[b]
Handgrip max (kg)	14.2 (9.0)	13.5 (7.8)	0.331[b]
Grip to BMI ratio (kg/kg/m^2)	0.82 (0.4)	0.85 (0.4)	0.623[b]

Note: Statistical differences were calculated as follow:
[a] Pearson Chi-Square Goodness of Fit test; in this case the data are presented as a number (percentage); [b] Kolmogorov-Smirnov test; in this case the data are presented as a median (IQR); Statistical significance * $p < 0.05$

Table 2. Girls' handgrip strength – Tukey's Hinges percentiles

	4	5	6	7	8	9	10	11	12	13	14
75	8.6	9.6	11.4	14.0	15.0	16.6	19.4	22.9	27.6	28.5	31.9
50	6.5	8.1	9.6	12.6	13.7	14.3	17.0	19.8	22.8	25.5	29.4
25	6.1	7.0	8.3	11.0	12.8	12.9	15.3	17.2	18.7	22.3	27.2

Table 3. Boys' handgrip strength – Tukey's Hinges percentiles

	4	5	6	7	8	9	10	11	12	13	14
75	8.7	10.6	12.5	15.1	16.9	18.3	21.6	22.7	25.9	34.9	42.5
50	7.1	8.9	9.9	12.8	14.1	16.4	18.9	20.3	23.7	28.1	37.5
25	6.1	7.7	9.1	10.4	12.4	15.0	16.9	19.1	20.5	25.5	35.1

Table 4. Girls' grip to BMI ratio – Tukey's Hinges percentiles

	4	5	6	7	8	9	10	11	12	13	14
75	0.56	0.58	0.73	0.83	0.90	0.96	1.20	1.28	1.31	1.49	1.55
50	0.44	0.53	0.60	0.78	0.81	0.85	1.10	1.15	1.16	1.37	1.51
25	0.41	0.47	0.52	0.71	0.76	0.78	0.84	1.12	1.14	1.16	1.31

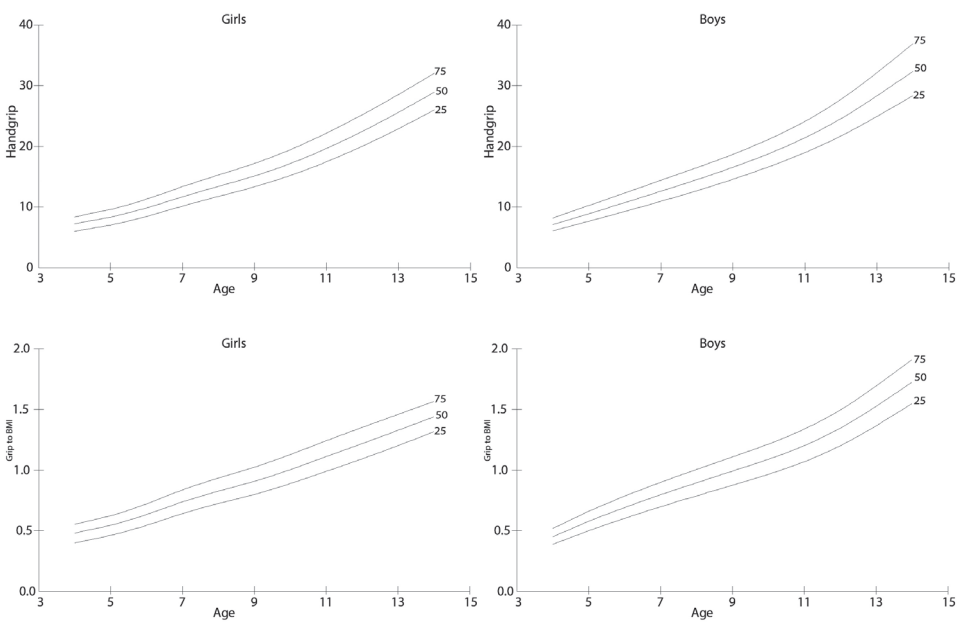

Figure 1. Percentile charts for handgrip strength and strength to BMI ratio in both sexes

Table 5. Boys' grip to BMI ratio – Tukey's Hinges percentiles

	4	5	6	7	8	9	10	11	12	13	14
75	0.53	0.68	0.79	0.92	1.10	1.10	1.20	1.23	1.35	1.77	2.20
50	0.47	0.58	0.68	0.79	0.86	1.00	1.16	1.18	1.22	1.48	1.90
25	0.36	0.50	0.59	0.70	0.79	0.90	0.92	1.00	1.12	1.40	1.83

Table 6. Multiple regression model for maximal handgrip strength

	Unstandardized Coefficients		Standardized Coefficients	t	*p* value	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	–9.543	2.130		–4.481	<0.001**	–13.727	–5.359
Age	0.886	0.116	0.348	7.609	<0.001**	0.657	1.115
Sex	1.269	0.238	0.095	5.322	<0.001**	0.801	1.738
Height in m	6.006	2.465	0.145	2.437	0.015*	1.164	10.848
Weight in kg	0.287	0.028	0.466	10.436	<0.001**	0.233	0.341

Note: Adjusted R Square = 0.836; Statistical significance * $p < 0.05$, ** $p < 0.001$

Table 7. Multiple regression model for grip to BMI ratio

	Unstandardized Coefficients		Standardized Coefficients	t	*p* value	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	–1.209	0.122		–9.939	<0.001**	–1.448	–0.970
Age	0.055	0.007	0.453	8.323	<0.001**	0.042	0.068
Sex	0.070	0.014	0.109	5.127	<0.001**	0.043	0.097
Height in m	1.408	0.141	0.709	10.001	<0.001**	1.131	1.684
Weight in kg	–0.009	0.002	–0.289	–5.438	<0.001**	–0.012	–0.005

Note: Adjusted R Square = 0.767; Statistical significance ** $p < 0.001$

DISCUSSION AND CONCLUSION

The main aims of this study were to create reference values for handgrip strength and grip strength to BMI ratio for children in the Czech Republic. From the multiple regression model, it appears as though maximal handgrip strength as well as grip to BMI ratio are highly dependent on all implicit independent variables – age, gender, height and weight with weight and age being the most influential, while height and gender were less influential. In our sample, there was no evidence of a statistically significant difference in

handgrip strength between sexes. BMI values alone were statistically similar in both sexes. However, although girls were stronger in handgrip strength, they were weaker in grip to BMI ratio, which was interesting. It seems that dividing handgrip strength by BMI might bring a novel approach to the measurement of muscle strength in children, which is different from the isolated handgrip strength measures.

The fact that maximal handgrip strength was related to BMI in the present study (i.e. grip strength-to-BMI ratio) was in accordance with the results of similar studies where correlations between BMI and grip strength were found (Jette et al., 1990; Chong et al., 1994; Ertem et al., 2005; Rantanen et al., 2000; Apovian et al., 2002). The increasing differences in grip strength to BMI ratio between boys and girls from 12 years in the present study agreed with Neu et al. (2002) and other studies which associate increases in hand grip strength with gender during maturation and growth (Ploegmakers et al., 2013; Mathiowetz et al., 1986), especially as the effect of sex hormones begins to play a role in the maturation process.

It has also been suggested that males are stronger than females in all age groups, and that hand dominance does not significantly affect handgrip strength performance (Mathiowetz et al., 1984; Ferreira et al., 2011). Additionally, Mathiowetz et al. (1984) found a high correlation between handgrip strength and age while gender and age as well as height and weight may also influence handgrip strength (Rauch et al., 2002; Newman et al., 1984; Ploegmakers et al., 2013). Those findings are usually used to generate reference values for different groups (Mathiowetz et al., 1986; Hogrel, 2015).

In conclusion, the data from the present study show that body mass and age play a greater role in estimating hand grip strength than gender and height in children. It is important to note that the subjects in the present study were recruited from an organized activity programme, possibly indicating that the children examined in the present study may be more active than their sedentary peers. Therefore, future research should investigate whether the same relationships exist between anthropometric measures and grip strength in sedentary children, or in active children from different countries.

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MERLEAU-PONTY ON EMBODIED SUBJECTIVITY FROM THE PERSPECTIVE OF SUBJECT-OBJECT CIRCULARITY

JAN HALÁK

ABSTRACT

The phenomenological point of view of the body is usually appreciated for having introduced the notion of the 'lived' body. We cannot merely analyze and explain the body as one of the elements of the world of objects. We must also describe it, for example, as the center of our perspective on the world, the place where our sensing is 'localized', the *agens* which directly executes our intentions. However, in Husserl, the idea of the body as lived primarily complements his objectivism: the body (*Leib*) is an objective *and* mental reality, a 'double unity', as he writes. In contrast, Merleau-Ponty's later considerations of the body in *Phenomenology of Perception* tend to the idea of a *circular* relationship between the objective and subjective dimensions of the body – between the objective and the lived. One of the means to overcome the idea of the body as a site of the correlation between two opposite and complementary realms is, for Merleau-Ponty, the philosophical interpretation of an early neurological notion of 'body schema'. Body schema is neither an idea nor a physiological-physical fact, it is rather a practical diagram of our relationships with the world, an action-based norm in reference to which things make sense. In the recently published preparatory notes for his 1953 courses, Merleau-Ponty dedicates much effort to further developing the notion of body schema, and interprets fresh sources that he did not use in *Phenomenology of Perception*. Notably, he studies various possibilities of how this practical 'diagram' can be de-differentiated (pathology) or further refined (cognitive and cultural superstructures, symbolic systems), which shows the fundamentally dynamic unity of the body. This paper summarizes the basic elements of Merleau-Ponty's 1953 renewed philosophical interpretation of the notion of body schema, while contrasting it to the more traditional understanding of the body in phenomenology and in recent philosophical texts dealing with body schema.

Keywords: Merleau-Ponty; Husserl; Gallagher; subjectivity; human body; body image; body schema; perception

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INTRODUCTION: OUR IDEA OF THE BODY CO-DETERMINES OUR IDEA OF SUBJECTIVITY

In the second book of his *Ideas Pertaining to a Pure Phenomenology* (1989), Edmund Husserl introduced a perspective on our body that has the potential to bring an entirely new view on subjectivity. Distinguishing 'one's body' (*Leib*), a body intertwined with a 'soul', from mere physical bodies (*Körper*), Husserl succeeded in demonstrating the functional characteristics of the living body that cannot be grasped exclusively from a third person perspective. Of course, our body is part of the objective world, it is "integrated into the causal nexus of material nature" (Husserl, 1989, p. 167) and is linked to other objects by causal, physico-chemical relationships. Yet, apart from all the objective properties it shares with other objects, our body possesses a complex of experience-related values that an external object can never have. By opening up this new, 'phenomenological' perspective on the body, Husserl made a step that founded the 20th century tradition of an interpretation of subject's body that breaks with a deeply rooted European tradition of how to understand our subjectivity. Ever since Descartes defined our body as a *res extensa*, pure material extension foreign to the essence of subjectivity (Descartes, 2008, Second Meditation), Western culture has understood the body as irrelevant for subjective processes, or only as their factual limitation. Inversely, a transformation of the idea of our body, as introduced in particular by some of Husserl's descriptions, also requires a transformation of the definition of the subject – 'mind', or 'consciousness'. If my body is no longer an object among other objects, a machine inexplicably connected to me, but rather the 'vehicle' or 'agent' of my existence (Merleau-Ponty, 2012, p. 84; Merleau-Ponty, 1968b, p. 171), then the essence of my subjectivity is linked to the way in which I rely on my body, and to my capacity to eventually transform it.

This paper briefly presents how Merleau-Ponty developed the problem of the embodied subject as introduced by Husserl, and how he developed it in a way which, in comparison to other interpretations of the role of the body in experience (phenomenological or not), is original even today. Before getting into the details of how the change of the role of the body led Merleau-Ponty to a transformation of the idea of subjectivity, I will briefly discuss Husserl's account of the functional characteristics of the body and the paradoxes it opens, and Merleau-Ponty's interpretation of the neurological notion of 'body schema'.

Husserl: the body-organ presupposes the body-object

As Husserl describes in the second book of his *Ideas* (1989, § 36), when I touch my left hand with my right hand, the latter experiences a series of objective qualities in the former, such as a particular temperature, hardness, or structure of the surface. Simultaneously, however, the action produces in the left hand a series of sensations of being touched. Husserl stresses that these subjective perceptions do not belong to the objective world, as the objective characteristics experienced by the right hand do. The feeling of being touched does not bring, to the physical thing 'my body', a new set of objective characteristics as it would to any object. Rather, the physical body I touch (*Körper*) becomes *someone's* body, a subject's body (*Leib*). From now on, this object shows itself as the site of someone's sensations, as a "bearer of localised sensations" (Husserl, 1989, p. 152; quoted in Merleau-Ponty, 1964).

Husserl furthermore describes (1989, § 41) how we always experience objects from a particular perspective and as specifically oriented (visible from one side or the other, close or far, up or down, right or left, etc.). Interestingly, since I cannot change my perspective on my body as I please, i.e. I cannot, for example, move closer to it or see it from every angle, the range of possibilities of how my body can show itself to me is restricted. My body has an exceptional status in this respect, for its relatively constant orientation towards me serves as the 'zero point of orientation' for the perception of objects (Husserl, 1989, p. 165f.). Objects can only be 'there', 'right', 'far', 'up', because my body is always 'here' and thus constantly serves as a reference point for all the areas of the world that surround me.

Moreover, since I am able to 'freely' or 'spontaneously' move my body (Husserl, 1989, § 38) and thereby change the reference point of the phenomena around me, I am able to alter their orientation and appearance (with no need to change the objects themselves). Simultaneously, I am able to act upon the objects around me 'via' or 'thanks to' my body. Thus, both those events 'conditioned' by me and those caused from the outside meet in my body. My body is the 'turning point' of these two series. My body is simultaneously passive (moved, affected by objects) and active (moving itself, having effect on objects). In this way, my body is not only perceived as other objects are, and influenced by them, it is also the 'organ' and the 'means for all my perception' (Husserl, 1989, pp. 168 and 167).

Because of these and other similar characteristics, the role of my body in my experience fundamentally differs, for me, from the role any external object can have. My body is not simply an object of my perception, but my organ of perception; it is not only an arbitrary result of experience, but its systematic condition. How does, however, this body-organ *itself* show itself to me? Or in Husserl's words, how does it acquire its unity for me? Interestingly, if we attempt to combine these two aspects of Husserl's descriptions – the body serving as organ for my perception and being perceived by me – we will be confronted with a challenging task.

As we have already seen in the example of my two hands touching each other, Husserl claims that my body acquires its unity for me when, on a perceptible object, I 'co-apprehend' (Husserl, 1989, p. 163) a series of subjective sensations aroused by my perception of that object. In other words, when I touch my left hand with my right hand, between the series of objective phenomena my active hand perceives and the subjective phenomena my passive hand feels, I observe "consequences […] in consistent parallels" (Husserl, 1989, p. 162). Husserl stresses that there is no duality in this perception, that I simply perceive my body as a unity. It is, however, not difficult to see that the vocabulary, and the general conceptual framework Husserl relies on, are fundamentally dualistic. The unity of the body is, for him, a unity of co-apprehension of two dimensions, and therefore a 'double unity' (*Doppeleinheit*, or a 'two-fold unity'; Husserl, 1989, p. 170). From this perspective, the body is a 'sensing thing' or even a 'subjective object' (Husserl, 1989, p. 159; and Husserl, 1971, p. 124; quoted in Merleau-Ponty, 1964).

How are we to combine such an account with the description of the body as an organ of perception? According to Husserl, I can only perceive the phenomenon of my body as organ of perception (*Leib*) by 'co-apprehending' subjective sensations on a body as object of perception (*Körper*). But if we claim that the phenomenon of one's body, the body-organ supposedly constitutive for my perception of objects, presupposes the perception of

a body-object, the two perspectives we are trying to combine are incompatible. (I have developed this argument in more depth in a previous article, cf. Halák, 2014.)

Husserl obviously did not leave his argumentation in such an impasse. In his ontological framework, the paradox can only be resolved to the benefit of transcendental consciousness. The objects are constituted in consciousness, they do not transform the rules of constitution, and since my body is an object (on which another, 'higher', unity is built, thanks to the co-apprehension of sensations), it cannot alter the way in which I experience the world. My body (*Leib*), which allows me to see the world from some perspective, is founded, for Husserl, on a reality constituted by the transcendental consciousness, which itself does not have any perspective or localisation, and is itself not corporeal.

In sum, Husserl does not apply his phenomenologically-discovered subjective-functional characteristics of the body to the way we perceive our own body, and thus neither to the ontic unity of the body (*Leib*) nor to embodied subjectivity (here we are interpreting Husserl, 1989, §§ 36–42). Although he did reveal that the body-organ is, at least in some aspects, a *subject* of perception, our body (*Leib*) is ultimately not, for him, something on which our perception is founded, but only a constituted *object* to which a series of subjective sensations is correlated. Due to this tension, the body (*Leib*) remains for Husserl an ontologically paradoxical being endowed with 'abnormal' qualities (Husserl, 1989, pp. 63ff.; Husserl, 1973, p. 280): "It is a remarkably imperfectly constituted thing" (Husserl, 1989, p. 167). In spite of such a non-standard status of our body in regard both to our subjectivity and to the objective world, the priority of transcendental consciousness for the constitution of our experience remains unaffected by the role our body has in our experience. In this respect, as other critics have already pointed out (e.g. Carman, 1999, p. 205), despite Merleau-Ponty and Husserl are both labeled as 'phenomenologists', there is a clear disparity between them.

The early works of Merleau-Ponty: a living body is not an object

Merleau-Ponty familiarized himself with Husserl's second book of *Ideas* as early as in 1939, thanks to his visit to the Husserl Archives, which had been established in Leuven shortly after Husserl's death (cf. Van Breda, 1962). He soon took notice of Husserl's difficulties with the phenomenon of the body and was aware of the fact that Husserl's description of the body contradicts the conceptual framework he usually relies on (cf., e.g., Merleau-Ponty, 2000, pp. 303f.; for Merleau-Ponty's explicit interpretation of the second book of *Ideas*, cf. in particular Merleau-Ponty, 2000, pp. 215–234; Merleau-Ponty, 1995, pp. 104–113; Merleau-Ponty, 1964). What was an obstacle for Husserl, Merleau-Ponty took as the point of departure for his own philosophical project, influenced in particular by Gestalt psychology. It is precisely because we are unable to provide any other than a paradoxical, unsatisfactory account of a subject's body (and other phenomena related to our corporeality), that we must no longer confront the paradoxes as obstacles or exceptions, but as a point of departure for the development of a new philosophical perspective (cf., e.g., Merleau-Ponty, 1996, p. 380). This was Merleau-Ponty's crucial insight.

In the body, the transcendental and the empirical dimensions tend to change their mutual role: the body acquires transcendental values and the mind becomes more closely linked to empirical events and their arbitrary transformations. Merleau-Ponty's goal is precisely

to develop a conceptual framework which would enable us to *combine the third-person (objective, external) and first-person (subjective, reflexive) perspectives on the body, and on human existence in general* (cf., e.g., Merleau-Ponty, 2000, pp. 11–13). If the consciousness were detached from its empirical, corporeal situation, it would be hard to explain how it could ever be tired or ill, how it could sleep, how it could ever be influenced by the objects it experiences. Merleau-Ponty hoped that a renewed understanding of our corporeality would enable us to account for such degenerative phenomena on the one hand, and the possibility of cultural, symbolic sublimation of perceptual life on the other.

In his 1942 first doctoral thesis, *Structure of Behavior*, Merleau-Ponty attempts to show that the living body does not function as a machine, and that it is not simply an object constituted by a disembodied 'transcendental consciousness', either. Merleau-Ponty's positive aim was to describe the relationships of an organism, or a living body, with its environment, and the subject's relationships with his body. His descriptions in *Structure of Behavior* are made 'from the outside', not from the perspective of the living body itself, which is linked to the fact that he grounds his philosophical conclusions on the results of contemporary psychology and physiology. Such an approach allows him to develop significantly the observations of Husserl, whose descriptive method was based on 'imaginative variation', a systematic abstraction aiming to discover the core meaning, or the essence, of a set of phenomena given in a first-person perspective.

We have seen that, for Husserl, the living body was an object among other objects, but an object which had some exceptional characteristics, i.e. that of being one-directionally 'correlated' to a set of sensations. In other words, it was an exceptional and non-standard object; it was an object *and something more*, with 'sensations' correlated to it. Merleau-Ponty's work in *Structure of Behavior* aims to show precisely that the very assumption that our body is a part of the world of objects, is itself not exact and must be corrected.

If the living body were (for one part) an object, it would be unconditionally inserted into the mechanical processes of the objective world. However, experimental studies has shown that under normal conditions the external stimuli do not simply launch in a living body a pre-established reaction circuit (reflex), as an external force would in a machine. "The organism does not function as a machine" or as a purely physical object (Merleau-Ponty, 2000, p. 14; cf. Merleau-Ponty, 1963, p. 147), and perception is not a mechanical process, for the living body does not respond to stimuli, but rather to specific complexes of stimuli, to situations. Since experiments show that stimuli may vary while the organism reacts similarly and perceives the same situation endowed with the same meaning, and that the reactions and the perceived situation can vary while the stimuli are identical, we cannot use the concepts of physical stimuli and meaningful situation interchangeably. The requisite of a 'meaningful situation' for the organism to react implies that the reaction is connected to subject-related conditions. More precisely, the situation must 'fit into' a place in the range of the subject's possible actions. For this reason, we cannot understand the relationship a living body has with its environment only as passive and reactive, but rather as 'prospective' (Merleau-Ponty, 2000, p. 38). The organism is 'prepared' for and sensitive to only a particular set of situations. As for example Gilbert Simondon explains in his lectures on perception, living organisms have, so to say, categorial understanding of their surroundings rather than concrete understanding, i.e. they do not react to individual objects or events,

but to certain categories or classes of objects and events (e.g. food, danger, shelter), and to nothing else (Simondon, 2006, p. 111). A clear illustration of this idea is given by Uexküll in his well-known text on the surrounding world of a female tick, which, amidst all the richness of the world, is open only to three phenomena: the overall amount of surrounding light, the smell of the butyric acid from a mammal's sweat, and the specific temperature of a mammal's blood (Uexküll, 1958).

On the other hand, the '*a priori*' prospective activity structuring the environment of an organism is limited in its scope by the range of possible actions a particular organism is able to realize. Thus, although it is impossible to understand an organism without taking into account its meaning-giving 'prospective' attitude and activity, its capacity of 'grasping' its environment in a meaningful way is not universal. It is limited by the organism's structure; it always depends on concrete local conditions; it is linked to the practical context faced by the organism; it is affected by every bodily malfunction, etc. The organism's 'understanding', or grasping of its situation, and ultimately of its environment as a whole, is not unconditioned as in the case of a 'transcendental consciousness', which can be defined as a *universal* capacity to grasp *anything* as a meaningful entity.

In his second doctoral thesis from 1945, *Phenomenology of Perception* (2012), Merleau-Ponty further elaborated the interpretation of the unity of the body and its relationships of subjective and objective dimensions from the 'internal' perspective, i.e. as they appear in a subject's perception. *Phenomenology of Perception* shows that it is no more possible to define the body as an object to which a set of sensations would be coordinated. Again, Merleau-Ponty draws from experiments in physiology, neurology, Gestalt psychology and psychopathology. We cannot understand even *physiological* functioning without taking into account our existence as a totality (cf. Merleau-Ponty, 2012, pp. 89f.), i.e. the 'subjective' dimensions such as intentions to perceive or a choice of orientation. In some pathological cases, for example, the subject cannot perform a movement given a conceptual-verbal command, while he can do the same movement in a practical context. This confirms once again that the same physical activity is performed *or not* depending on its *meaning* for the subject.

All Merleau-Ponty's descriptions lead to the idea that we cannot understand the living body as an object *plus* some other, 'functional' characteristics, that would be superposed to an objective layer – a presupposition widely accepted not only in the physiology and psychology of Merleau-Ponty's time, but in some respect also, as we have seen, in Husserl's account of the unity of the body. If we start describing the living body as an object, and then want to 'add' some other characteristics, we have gone too far, so to speak, and will not be able to understand its connection with the psychological life or the 'subjective' dimension of the being in question. So, according to Merleau-Ponty, the objective and subjective dimensions of the body are not only juxtaposed or systematically correlated (Husserl's 'parallel' of consequences). Their relationship is rather that of mutual implication and circular dependence or conditioning, for we would be unable to understand the orders as separate if we did not understand the embodied subjectivity as one totality. The objective, physiological processes in the body are conditioned by the organism as a totality, transcending the sum of its physical elements, i.e. as endowed with its specific 'prospective *a priori*'; whereas the subjective, psychological processes are based on the corporeal infrastructure, and never cease to rely on it.

Merleau-Ponty's 1953 lectures: circularity between the perceiving and the perceived

In 1953, Merleau-Ponty was appointed to the Collège de France, which ensured him greater academic freedom. For his first lectures at the Collège, he took over the topics from his two doctoral theses with the aim to show their broader philosophical relevance, not limited only to what could be understood as the psychological peculiarities of perception. It is noteworthy in the context of our topic that the central idea he wanted to elaborate further was the concept of circularity between the subjective and objective characteristics of the body, as well as between subject of perception and external object of perception. Instead of only negatively observing that body is neither an object nor an idea for the consciousness, Merleau-Ponty now attempted to draw stronger philosophical conclusions from his earlier phenomenological analyses, and to attain a positive grasp of the problem of circularity.

First, it has to be thoroughly described how the circularity defines relationships between the body and its surrounding world. Such exemplary phenomena as visual depth, spatial orientation, or movement, attest that between a living body and its environment, there is an intrinsic mutual reference, which determines which form the world acquires for us. These phenomena are never exclusively 'subjective' representations or 'objective' givens. Based on examples taken over from Max Wertheimer's experiments (Wertheimer, 1912), Merleau-Ponty shows, for example, that an 'objectively' or 'subjectively' identical situation can be perceived both as 'oblique' or 'vertical', depending on how the subject concretely 'appropriates' the surrounding space (cf. Merleau-Ponty, 2011, pp. 41–54; cf. Merleau-Ponty, 2012, pp. 253–265). Our sense of 'verticality' is closely linked to, and dependent on, what we can accomplish in such a 'vertical' space and how it phenomenally reacts to our actions (e.g. when we walk upright, the ground moves horizontally). The perception of orientation such as 'verticality' is thus a norm for some activity, a temporary 'standard' open to transformations depending on how this activity can be concretely realized. Based on other experiments from Gestalt psychology and neurology (e.g. Michotte, 1954), Merleau-Ponty similarly demonstrates that movement can only be perceived by a subject able to move, i.e. that a perceived movement calls for some of the subject's motor capacities and is itself a modality for these capacities to activate themselves (cf. Merleau-Ponty, 2011, pp. 58–73; Merleau-Ponty, 2012, pp. 279–293).

Merleau-Ponty's aim is to generalize these findings. In these and other similar cases, a subject experiences *in the world* something that is fundamentally linked to his/her attitudes, possibilities, capacities, and abilities; and vice versa, the subject only has these powers at his/her disposal inasmuch as the appropriate surroundings call out for them. When I walk, for example, and I perceive the space between trees as a void, the perceptual meaning I experience is linked to my ability to move and thereby to control the way in which my spatial environment phenomenally transforms. A subject conceived as a contemplating conscience, a pure synthesizing activity or the 'faculty of judging' (Descartes, 2008, p. 23) would lack any reasonable resource permitting it to differentiate between an 'obstacle' and 'walkable space', for both phenomena would be 'objects' synthesized from aleatory bits of 'sensory givens' according to a neutral *a priori* logic. (A similar problem is encountered by those who strive to produce an artificial intelligence: it cannot be designed as a system of facts and rules of how to relate them, but rather as a system of problem-solving functions; cf. Dreyfus, 1992.) Likewise, an intellectually conceived conscience cannot

account for the phenomenon of orientation: a landscape or a familiar face turned upside down do not have the same perceptual meaning for us, for we do not recognize them; for a transcendental consciousness, though, the two phenomena represent simply *one and the same* object from a different perspective (cf. Merleau-Ponty, 2012, p. 20). A landscape is a passable space that invites me to invest my capacities to change my position; a face is the site of gestures of which I am myself capable and the meaning of which I can situate into my own emotional and cognitive world. When they are turned upside down, they are no longer the sites for my powers to be employed, which is exactly why they become foreign and unrecognizable for me, why they are now different realities.

The perceptive experience in general thus contradicts our natural belief that the objects we perceive exist, for us, independently of whether, and how, we perceive them. Merleau-Ponty's studies of perceptual experience show that the meaning of the perceptual world, and possibly of the world in general, results from an *interaction* or *mutual reference* of a subject-related perspective or attitude and object-related response to this attitude.

Merleau-Ponty's 1953 lectures: the living body as body schema

The circularity between our perceiving body and the perceived world has the potential to change our idea of what an object is and what, in general, the world is. The questions now are: who is the 'subject' of this relationship with the world, and how are we to understand its nature? Merleau-Ponty's goal is to help us to understand how the subject can enter into interactions with the world, as described above, and how it can be open to the transformations that such interactions imply and require (cf., e.g., Merleau-Ponty, 1968a, p. 55). It is clear after previous explanations that such a subject cannot be conceived as a mere product of causal interactions between objects (as a sort of physiological machine), nor as a universal capacity to relate to meaningful objects (such as the Cartesian *ego cogito*, the Kantian transcendental subject, or even the Husserlian transcendental consciousness). But how are we to conceive it positively?

When Merleau-Ponty approached this question afresh in 1953, he took as a point of departure a notion originally developed by neurologists: 'body schema' (Merleau-Ponty's primary sources are Head, 1920; Head and Holmes, 1911–1912; Lhermitte, 1939; Schilder, 1923; Schilder, 1950). According to Head's seminal definition (1920), the body schema is a preconscious "standard against which subsequent motor changes are measured" (Gallagher, 2005a, p. 19). Based mainly on the definitions of Head and Schilder, Merleau-Ponty understands the body schema as a practical intuitive diagram of my relationships with the world, a 'register' where all of my attitudes and actions are 'noted', and which therefore provides the reference norm in contrast to which I perceive something as specifically spatially and temporally related to my body (Merleau-Ponty, 1968a, p. 16; for Merleau-Ponty's discussion of the notion of 'body schema', cf. Merleau-Ponty, 1968a, pp. 16–21; Merleau-Ponty, 1995, pp. 270ff.; Merleau-Ponty, 2011, pp. 126ff.; Merleau-Ponty, 2012, pp. 100ff.).

Already in *Phenomenology of Perception* (2012), Merleau-Ponty studied the concept of body schema and rejected its early 'associationistic' and later 'formalist' interpretations, which attempted to conceive it as the result of an empirical accumulation or as an *a priori* form (Merleau-Ponty, 2012, pp. 100–105). In the 1953 lectures, his basic position remained the same: the body schema is a phenomenon that transcends the double

polarity of subject and object, and thus supports the idea of circularity between empirical and transcendental dimensions in the body. On the one hand, such disturbances of one's relationship with the body as autotopagnosia (in which a subject has lost the capacity to grasp conceptually some parts of his/her own body, but has maintained practical access to it) show that the body schema is not a set of ideas or representations of consciousness (Merleau-Ponty, 2011, p. 139; in contemporary literature, cf., e.g., Paillard, 1999). On the other hand, the body schema is not a body-object either, as we can see in the example of certain pathological illusions, such as the amputee's 'phantom limb'. In these cases, the 'overall practical activity' continues following the original body schema, in spite of the fact that the subject has lost the objective physical part on which the activity needs to be based (Merleau-Ponty, 2011, pp. 137–140; cf. Merleau-Ponty, 2012, pp. 78–91; in contemporary literature, cf. in particular Gallagher, 2005a, pp. 86–107).

But, again, these demonstrations are mostly negative, for they only show that it is impossible to account for the body exclusively from a third- or first-person perspective, and that their potential combination results in paradoxes. In the 1953 Collège de France lectures, however, Merleau-Ponty studied new sources relevant to his topic (in particular Schilder, 1950) and significantly developed his interpretation of the philosophical implications of the neurological notion of body schema.

We can speak of the body schema positively as of something possessing a 'pre-logical' unity of 'lateral coexistence' or 'mutual implication' (Merleau-Ponty, 2011, pp. 126 and 133). These characteristics must be understood in contrast to those which would be derived from a superordinate idea or meaning (mental entity), or from a merely material extension with no inherent connection of its parts and only external mechanical relationships between its distinct elements (physical entity). On several levels, the specific unity of the body defies the attempt to reduce it to either objective or subjective explanation, and thus supports the idea that it requires a new ontological category which would correspond to its singular character. Our revised idea of subjectivity, asserts Merleau-Ponty, must correspond with this new ontological category.

The special character of the body can be demonstrated on the level of its relation to space and perceived objects. The body schema is not an object that we would act upon, or a mental representation of such an object, but a preliminary 'attitude', 'privileged position', or 'point of departure' that we need to have at our disposal while confronting a particular situation in the world, and the objects in it (Merleau-Ponty, 2011, pp. 133 and 138f.). For this reason, the body schema is *not in space,* but rather serves as the reference point or norm, based on which we can differentiate 'here' from 'there', and thus understand spatial relationships. As such a spatial norm for any practical activity, the body schema is *not perceived*, as we perceive objects, for it always stays in the background of the perceived. The relationship of the perceived object to my perceiving body is therefore that of a figure on the ground, as understood in Gestalt psychology. All thematic phenomena refer to my body and only show themselves in contrast to it, as a deviation from the norm my body continually re-establishes by its specific arrangement and position.

Due to the necessary mutual implication between the perceived phenomenon and the body as the point of departure for an action and the background for a perception, our position and attitude must be continually readjusted according to what we intend to perceive. The schema therefore does not correspond either to the objective emplacement of our body

and its objective form, or to an *a priori* form. Merleau-Ponty refers to experiments showing that the emplacement of the body schema is shifted in the direction of corporeal tonus, i.e. in the direction of our perceptive intention, compared with the objective position of the body (Merleau-Ponty, 2011, p. 143).

Because all of these functions require constant readjusting, the body schema as a structure is continually transformed and 'reanimated' via movement. Correspondingly, the world in front of us acquires a different level of structuration depending on our relative (in)ability to adopt an appropriate position, posture, or movement. In sleep or at rest, for example, when we are not facing any practical situation to deal with, the body schema loses its differentiation, and becomes less structured. In such situations, correlatively to the lowered level of articulation of our body schema, the differences between, for example, left and right or above and below become more vague (Merleau-Ponty, 2011, pp. 160–165). Similarly, the 'compensatory' movements in patients with apraxia can be interpreted as attempts to bring back the pathologically weakened articulation of their body schema (Merleau-Ponty, 2011, pp. 139–141). In contrast to that, situations requiring our active participation ask for a particular position, posture, or movement of the body, which in turn contribute to a finer perception of the situation. The body can also 'get in the way' of my activity when it is lacking the necessary capacities or is exhausted, and this situation is similarly perceived by me as a particularly 'adversary' characteristic of the perceived object (cf. Gallagher, 2005a, p. 34).

We have seen that Husserl already described, for example, how the body serves as a spatial reference but, for him, the very unity of our body was co-founded on Cartesian extension, objective space. Merleau-Ponty's interpretations of body schema show how the body itself is the criterion for any possible spatial differentiation, and thus the fundament for our idea of objective space, rather then being itself founded on it. This, in turn, changes our understanding of the relationships between our 'practical' body (the body as a departure point and referential norm for our actions and perceptions in the world) and the body-object (the body as the target of our actions and perceptions).

The body as a norm and agent of perception ('schema') has itself the capacity to 'sediment', i.e. to acquire the function or the value of a body-object (Merleau-Ponty uses the expression 'to sediment' repeatedly in this context, cf., e.g., 2011, p. 148). Based on his interpretation of Schilder (1950), Merleau-Ponty asserts that the visual layer of the body schema, i.e. the image we have of our own body from the exterior, results from a fixation or objectification of our practical-motor body schema (Merleau-Ponty, 2011, p. 148; in the more recent literature, this relationship is described between 'body-image' and 'body-schema', cf. Gallagher and Zahavi, 2008, p. 146: explicit awareness of one's body, the body-image, "presupposes the tacit contribution of the body schema"; cf. Gallagher and Cole, 1995, p. 377). The same idea is shown negatively by the fact that a subject dealing with apraxia still has access to his body as object of perception, speech, and gestural pointing, but no longer as a point of departure for an action (cf. the well-known case of patient Schneider, Gelb and Goldstein, 1920; Merleau-Ponty, 2012, pp. 139ff.; Merleau-Ponty, 2011, pp. 139ff.; for a contemporary description, cf., e.g., Paillard, 1999); this means that, in apraxia, the sedimented, objectified structure remains, while the set of practical functions which helped to build it is damaged and inaccessible. If the body-object were one of the fundaments of our practical body, such relative

dependencies and disconnections, as seen for example in apraxia and autotopoagnosia, would be incomprehensible and factually impossible. Merleau-Ponty's interpretation of the body schema thus exclude the (widely spread) Husserlian idea that the body-schema presupposes the body-object as one of its preliminary components or layers. This thesis is valid on the phenomenological level, as we have seen on the examples of our perception of the body, but also on the ontological level, for the very idea of the ontological dimension of objects must be traced back to the context of the constitution of the object in our (bodily) experience (cf. Merleau-Ponty, 2000, pp. 215–234; Merleau-Ponty, 1995, pp. 104–113). Despite this partial clarification in the 1953 lectures, the difference and exact relationship between the practical 'infrastructure' and the objectified 'superstructure' of the body remains an open question for Merleau-Ponty. So it does, as far as we can say, in the contemporary discussions of this topic in neurology, cognitive science and their philosophical interpretation (cf. Paillard, 1999, p. 206; Gallagher, 2005a). Merleau-Ponty finds that the objectified body must be 'connected' to the practical, but also that it acquires a 'relative independence' (cf. Merleau-Ponty, 2011, p. 157). Inversely, we must be able to maintain the objectified superstructure in contact with the practical infrastructure, or it becomes, as in some pathologies, a mere 'mask' of the original bodily functions, their simplified and reduced imitation (cf. Merleau-Ponty, 2011, pp. 148 and 157f.). Between the two dimensions of the body, there is therefore circular influence and mutual structuration, while the superstructure is, so to say, more resistant to change, and the infrastructure more respondent to it. Merleau-Ponty's 1953 interpretation of the body schema brings a more exact idea of what we have called, with him, the circularity in the body, and thus sheds light on the subject-object paradox we have seen with Husserl.

CONCLUSION: THE ORIGINALITY OF MERLEAU-PONTY FROM A CONTEMPORARY PERSPECTIVE

Contemporary scholars dealing with embodiment underline that it is necessary to clearly distinguish 'body image' and 'body schema' (Gallagher, 1986; Gallagher, 1995; Gallagher, 2005a, pp. 17–40; 2005b; Gallagher and Cole, 1995, pp. 369ff.; Gallagher and Zahavi, 2008, pp. 145f.; Paillard, 1999, p. 197). Gallagher points out "a long tradition of ambiguous terminological usage" of the body image and body schema in many disciplines, in particular in neurology and its philosophical interpretations (Gallagher and Cole, 1995, p. 370; cf. Gallagher, 1986). With respect to this difference, the *body image* has been recently defined as "a conscious idea or mental representation that one has of one's own body"; an experience of one's body as one's 'intentional object', which can acquire several forms, such as percept, concept, or affect (Gallagher, 2005a, p. 25). In contrast to that, the *body schema* has been defined a set of "various neural motor programs command[ing] muscle groups" and remaining "below the threshold of my awareness and outside of my personal control" (Gallagher and Cole, 1995, pp. 369 and 373); or as "a system of sensory-motor capacities that function without awareness or the necessity of perceptual monitoring" (Gallagher, 2005a, p. 24; with an almost identical definition in Gallagher, 2009, p. 118).

The difference between body image and body schema has been tacitly addressed also by Merleau-Ponty, who was never prone to the terminological and conceptual confusion

criticized by Gallagher and other contemporary authors. Although several of Merleau-Ponty's neurological sources *did not* clearly maintain this difference (Lhermitte, 1939; Schilder, 1950), Merleau-Ponty does not confuse the two ideas and respects Head's original distinction between image and schema (Head and Holmes, 1911–1912). Throughout both *Phenomenology of Perception* (2012) and his 1953 lectures (2011), Merleau-Ponty translates Head's and Schilders's idea as *schéma corporel*, precisely in order to distinguish it clearly from an 'object of knowledge', image or representation contemplated by the intentional consciousness (Merleau-Ponty, 2011, p. 140; cf. Merleau-Ponty, 2012, pp. 100ff.; translator's introduction, Merleau-Ponty, 2012, p. XLIX; Carman, 1999, p. 218; Saint-Aubert, 2011, p. 29). Although the body schema "indicates an order" or "indicates the essential", it "does not need interpretation", asserts Merleau-Ponty, because it is "concrete, visible as a drawing" and provides "knowledge without concept, totality without idea" (2011, p. 133f.).

The importance of these facts becomes clear when we open the discussion of the relative phenomenal presence of the body schema and, correlatively, the question of how to situate it in relation to the ontological dimensions of subject and object.

Paillard, for example, recently stated that the schema is "registered", but "not perceived", that it provides a "clear localisation without sensory detection" (Paillard, 1999, pp. 198 and 201). Gallagher and Cole (1995) rely on the notion of 'proprioception', 'proprioceptive awareness' or 'proprioceptive information', which they define as "a felt experience of bodily position" consisting in "subpersonal, physiological information – the result of physical stimuli at certain proprioceptors" (pp. 376f.). The authors also claim that, to a great degree, "the body schema functions to control body posture and movement nonconsciously" (p. 385).

Gallagher essentially concentrates on showing that the body schema is not a body image, i.e. an intentional object of explicit consciousness. In a more recent publication (2005a), he explains that the body schema functions in a 'prenoetic' or 'non-conscious way', although "there are reciprocal interactions between prenoetic body schemas and cognitive experiences" (p. 35). In other words, I can become aware of some of aspects of the body schema, although it "is always something in excess of that of which I can be conscious" (p. 38). Gallagher claims even more strongly that "posture and majority of bodily movements operate in most cases *without the help of bodily awareness*" (p. 28, italics added), the 'awareness' being itself defined *in opposition* to intentional conscious perception, i.e. as a 'marginal awareness' (p. 27), 'non-observational self-awareness' (p. 29). This position ultimately leads to a relativization of the phenomenal presence of the body schema, clearly visible in Gallagher's claim that "whether and to what degree body awareness is a constant feature of consciousness is […] a matter of individual differences, and differences in situation" (p. 28).

In contrast to Merleau-Ponty's systematic explanation based on the conceptual pair ground-figure, norm-deviation, these above characteristics seem to have weaker explanatory potential, for they assert that the schema is simultaneously 'felt', 'registered', given as 'information', but is 'nonconscious', 'not sensorily detected', not (entirely) present to our 'awareness'. The body schema must be clearly situated in relationship to consciousness, if we are to understand how it can 'interact' with the body image, as Gallagher and others claim. In this respect, a relativizing or simply negative explanation of the phenomenal status of the body schema is not satisfactory.

Functionally, Paillard and Gallagher (with his collaborators) attempt to articulate the difference between the body image and body schema with the help of the opposition between 'knowing what' and 'knowing how', interpreted more precisely as the difference between 'what' (body image) and 'how to use it' (body schema), and 'where' (objective space) and 'how to get there' (practical space) (Paillard, 1999, pp. 207f.; Paillard, 1991; cf. Ryle, 2009); or between 'noetic contents' and 'prenoetic performance of the body', or 'implicit processes or operations' (Gallagher 2005a, pp. 32 and 17; cf. also Strawson, 1997). Ontologically, however, these distinctions seem to be interpreted following the opposition between subjective and objective dimensions, and thus without the ontological novelty of Merleau-Ponty. With the distinction of body image and body schema, Paillard believes he has met the distinction between the 'cognitive' brain and sensorimotor 'machinery' (1999, p. 212). Gallagher claims, in addition to the previously explained relativization of the phenomenal presence of the body schema, that the prenoetic body-schematic function is 'happening' as a 'performance' or 'process' (2005a, pp. 29, 32, 17).

On the one hand, Gallagher's efforts to distinguish between body image and body schema thus obviously converge with Merleau-Ponty's, who explicitly claims that the body schema "is not perceived", that it "precedes explicit perception" (Merleau-Ponty, 2011, p. 143). On the other hand, the positive characteristics of the body schema on the phenomenal and ontological level seem to be different in the two authors. In contrast to Gallagher, Merleau-Ponty (2011) explains that, precisely because the variations of the articulation of the schema arouse variations of the perceived world, the body schema "is also a specific structure of the perceived world" and that the perceived world "is rooted" in it (2011, p. 144). In other words, for Merleau-Ponty, the body schema as 'background' or the 'ground of the figure' of the world, i.e. its 'specific structure', is *in principle* constantly present in our perceptual experience. My body, claims Merleau-Ponty, is "the unperceived term at the center of the world toward which every object turns its face", which is why its presence in our experience is a "metaphysical necessity", not only a factual result of experience (Merleau-Ponty, 2012, pp. 84 and 93). The body schema is a *systematic* part of our experience of the world and its presence cannot be relativized, as it seems to be by Gallagher (cf. the citations above, in particular 2005a, pp. 27f.).[1]

A comprehensive interpretation of Merleau-Ponty's philosophy of the embodied subject in relationship to contemporary knowledge would require a separate, dedicated publication. The originality of Merleau-Ponty's approach, however, can be already seen in the fact that he understands the 'image' or 'perception' (be it of one's own body) and its 'background', provided by our body 'schema', *as an indivisible dynamic system of the establishment and shifting of norms and deviations from them*, and not primarily as an opposition between subjective 'mind' and objective 'machinery' or 'process'. Merleau-Ponty's different understanding of the phenomenality of the body schema thus entails also a different ontological conception of the subject.

According to Merleau-Ponty, the body-agent carries us to (or maintains us at, or prevents us from getting to) a point in space and time, where we experience something as

[1] At the time of writing, I was not aware of Emmanuel de Saint-Aubert's critical comparison of Merleau-Ponty's and Gallagher's interpretation of body schema. Cf. Saint-Aubert, E. de (2013). *Être et chair. Du corps au désir: L'habilitation ontologique de la chair.* Paris: Vrin, pp. 43–59.

given with such and such characteristics. More importantly, the body-agent does it *principally from within* the world and could not do it from outside or without being part of it: only as situated *inside* the world and being *part of it*, i.e. as being perceptible as an object, can body-subject take a stand, adopt an attitude from which it can experience something under a particular perspective. *The fact that we are, as subjects-bodies, part of the world of objects, thus has, for Merleau-Ponty, a transcendental value, i.e. it is not merely accidental, or limiting and negative characteristics, but it is constitutive of subjectivity* (cf., e.g., Merleau-Ponty, 1968b, 153f.: "My body sees only because it is a part of the visible in which it opens forth."). What a subject experiences mirrors the subject's standing among other beings, which is not possible without the subject being simultaneously perceptible, as an 'object', for then he would not have any standing.

We can interminably scrutinize our body as an object, but this effort will never clarify why and how we can only experience something 'thanks to' our body, in the sense we just described.

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OLYMPIC EDUCATION IN ALL GREEK SCHOOLS: ADOPTION AND ABANDONMENT

COSTAS MOUNTAKIS

ABSTRACT

Prior to the Olympic Games of 2004, Greece incorporated Olympic Education into the curriculum of its national educational system for one session per week in every grade from the ages of 6 to 18. The main forces behind this were: the International Olympic Academy, the International Foundation of Athletic and Sports Education, the Pedagogical Institute of Greece, the Ministry of National Education and Religious Affairs, and the Organizing Committee of the Olympic Games 'Athens 2004'.

Their main activity was in producing a programme of teaching materials, and the centralized nature of the educational system enabled the programme to be introduced in a very short time. The programme continued to be implemented in schools after the Olympic Games in the primary sector, and also as an option at the secondary level, under the name of 'Kallipatira'. The programme lasted after the Olympic Games and up to the 2007–2008 school year. During the 2008–2009 school year, however, it was removed from the curriculum. This paper presents an account of the way in which the programme was introduced into schools, which may be used as a model or guide for any other country organizing the Olympic Games.

Keywords: Olympic Games; Athens 2004; school curriculum

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INTRODUCTION

From the revival of the modern Olympic Games in 1896 it was considered by educationists and the general public alike that, apart from the benefits deriving from competition, records, strong and healthy bodies, and so on, the Games carried certain educational values. Those values could educate the general public in a way, socially acceptable by European countries, which shared more or less a common past and common social values, influenced in important ways by ancient Greek philosophy and Christianity.

If, however, one wants to find a starting point for the introduction of Olympic Education into schools one should not go as far back as to the revival of the modern Olympic Games, but to the establishment of the International Olympic Academy (IOA) in Greece on 14th June 1961. During this decade, one of the main concerns of participants in the sessions was the ideological orientation of the Games – that is the values and principles of Olympism. At those sessions many educationists from different countries and different disciplines, such as history, philosophy, the arts, physical education, etc., expressed their thoughts and ideas and made proposals which are the basis of what we call today Olympic Education. The thoughts and ideas of those people were primarily influenced by the writings of Baron Pierre de Coubertin, the founder of modern Olympic Games (Georgiadis, Lioumbi, & Makris, 2007, p. 32).

During the middle 1970s, at the 16th session of the IOA, Norbert Müller (1976, p. 95) introduced for the first time the term 'Olympic Education', for what up to then had been known as 'athletic education', 'physical education' or 'body education'. At the same time the question of the inclusion of Olympic Education in the school curricula of all countries and at all levels of education was raised. The need for teachers to be suitably prepared in order to be able to teach such programmes was also stressed (Karatassakis, 1978, pp. 123–136). It was also in this decade that the results of the implementation of such a programme in Quebec in Canada, before the Olympic Games of Montreal in 1976, was reported, and it was suggested that similar programmes be implemented in various countries around the world (Landry, 1980, pp. 287–298).

During the third decade of the IOA (1980–1989) prominent educationists such as Nissiotis from Greece and Zerguini from Algeria tried to give a definition to Olympic Education. Nissiotis, at the 20th session, considered that: "Olympic Education should not concentrate in preventing or correcting abuses only. This would have been only its defensive function. Its work must be more a constructive one, by trying to influence, by means of the Olympic principles and ideals, the large masses of young people or educators of all professions and social classes" (Nissiotis, 1980, p. 41).

As is obvious from the above account, Nissiotis raised two points. One is the negative elements of the Olympic Games, and the role that Olympic Education has to play in facing and coping with those problems. The other point stresses the problems of society, and the impact that Olympic Education can have in influencing the mass of youth of all social classes, and teachers of every subject. Zerguini, at the IOA 7th Session for Educators in 1986, gave a definition which emphasised its positive features:

> Olympic Education is the sum of the different methods and actions by the use of which the body, mind and the soul can be educated to create an integrated and balanced person. At the same time Olympic Education is the main force of the International Olympic Committee for the popularisation of sports, the dissemination of Olympic ideals and the preservation of the principles and unity of the Olympic Movement (Zerguini, 1986, pp. 1–2).

Professor Zerguini considers Olympic Education as having two missions, one aiming at the individual person, and how to improve him by influencing his body, soul and mind; and the other concerned with the power of the Olympic ideals and how Olympic Education

could help the International Olympic Committee to make sports more popular around the world.

During the 1990s, Olympic Education curricula were presented at sessions of the International Olympic Academy, which had been implemented in the summer and winter Olympic Games, along with the pedagogical materials, which were used for the implementation of those curricula (Binder, 1995, pp. 65–73). In 1990, Müller presented an Olympic Education curriculum and argued that, in order for such a curriculum to be implemented successfully, it had to take into consideration the difference in age of the pupils, the athletic tradition of each country, the existing school curricula and the feasibility of familiarising Physical Education (PE) teachers with the Olympic Curriculum (Müller, 1990, pp. 1–6). The problem of the implementation of Olympic education into formal education is still under consideration up to the present day (Hadjistephanou, Pigozzi, & McNamee, 2012; Martínková, 2012).

It was also stressed in those sessions that Olympic Education and the impact of Olympic values on the young generation were the only means of combating the present crisis of Olympism. The need to retrain teachers to teach Olympic Education was also frequently mentioned. Other participants in the sessions stressed the need for Olympic Education to be given priority, and to be implemented in schools even after the end of the Olympic Games (Brownlee, 2000, pp. 72–78; Rodichenko, 2000, pp. 98–103). In short it can be said that:

1. During the 1960's the pedagogical value of Olympism was stressed right from the first sessions of the IOA.
2. The early discussions about Olympic Education were influenced by the ideas of the Baron Pierre De Coubertin.
3. In the 1980s Olympic Education programmes were presented at the IOA, which were actually implemented in countries which organised the Olympic Games.
4. In the 1990s Olympic Education became an inextricable part of the Olympic Games. It was a requirement of each country Organising Committee for the Olympic Games (OCOG) should prepare and implement Olympic Education programmes in schools, and produce teaching materials (Georgiadis et al., 2007, p. 32).

The International Foundation of Olympic and Sport Education (IFOSE)

Another significant institution, which perhaps made the greatest impact on the introduction of Olympic Education in Greek schools, was the International Foundation of Olympic and Sports Education (IFOSE, 2009), with its founder, Antonios Tzikas.

Tzikas was a former president of the Greek Olympic Committee who had played an active role in athletics in Greece, and retired in 1996. As a practical man he believed that the theoretical discussions at the IOA were not enough, and that more action was needed. So when he retired as President of the Greek Olympic Committee, he decided to devote the rest of his life to spreading to the world the educational values of the Olympic Games. So in 1998 he created the International Foundation of Olympic and Sports Education.

During the 1990s, IFOSE organised three international seminars in Greece, at which prominent educationists from all over the world participated in discussing means of implementation of Olympic Education curricula in schools. Most of those educationists were

those who had taken part in the sessions of the IOA during the previous decades. So one can say that there was a continuity between the views of participants in the IFOSE seminars and participants at those seminal IOA sessions of the previous decades. The IFOSE seminars were held in ancient Olympia (13–15th September, 1996), Naousa (27–30th January, 1997) and Kalabrita (20–25th August, 1998).

Perhaps the most important of those seminars was the one held in Kalabrita, in which it was decided to ask the Greek authorities (i.e. the Pedagogical Institute and the Ministry of Education) to implement a pilot programme concerning Olympic Education in Greek schools (IFOSE, 1998). The aim of the programme would be 'to study the impact of Olympic values on the social behaviour of school children'. The timing of such a decision was felicitous, because it was just one year after Greece had assumed the responsibility (in September 1997) of staging the Games of the XXVIII Olympiad, and the ground was fertile for such initiatives.

In the autumn of 1998 the president of IFOSE, Mr. Tzikas, along with the senior consultant of the Pedagogical Institute responsible for Physical Education, Dr. Mountakis, visited the President of the Pedagogical Institute of Greece to discuss the possibility of conducting a pilot Olympic Education Programme in a number of primary schools that year. *This proposal, which was accepted, can be considered as the starting point of Olympic Education in Greece.* It was good timing, because that year the Pedagogical Institute had planned to introduce 30 pilot programmes in schools financed by the European Community Second framework of social support. The cost of each programme was not to exceed 30 million drachmas (about 90,000 Euros). The title of the programme was decided as 'The Introduction of Olympic Education in Schools', and it was to be introduced in the last grade (year 12) of 30 elementary schools. The programme proved to be very successful, as was shown by its evaluation (Kabitsis, Harahousou, Arvaniti, & Mountakis, 2002, pp. 184–192).

The expansion of the programme

Because of the success of the programme, the Ministry of Education decided to make a limited expansion the following year, 1999–2000, rolling the programme out to 10% of the elementary schools (about 400) in the three final grades. The following school year, 2000, was maybe the most decisive for Olympic Education. It was the year when the Ministry of Education of Greece signed a 'memorandum of understanding' with the OCOG 'Athens 2004', which designated the duties of the Ministry of Education to the OCOG. The draft of the memorandum was prepared at the Pedagogical Institute by the same people who were involved with the pilot Olympic Education programme. If the memorandum had been drafted by any other group of people, the future of Olympic Education in Greece would have been very different. The first item in the memorandum was the obligation of the Ministry of Education to employ 2,000 PE specialists in order for Olympic Education to be introduced to every school and every grade for one session per week. According to the memorandum, over the school year 2000–2001, the programme would be expanded to about half of the schools in the country at the elementary and secondary level. In 2001–2002 the programme was expanded to cover all state schools in the country. In 2002–2003 the programme was extended even further, to include private schools and Greek schools abroad.

One main reason for the rapid expansion of the programme was the very centralised nature of the Greek educational system, which demands that the same curriculum be followed in every school, and also the obligation of each school to comply with the directives of the Ministry of Education. However, two main issues had to be settled before the expansion of the pilot programme: a) the number of periods per week the programme would be implemented in each grade, b) whether the teachers delivering the programme were to be general teachers, or only PE graduates. With regard to the first question it was decided to implement the programme for one session per week in every grade at elementary and secondary level (i.e. from age six up to the age of eighteen). In that way there would be no pupil in the country who had not been introduced to Olympic Education before the staging of the Games. On the second question, different opinions were presented at the discussions between the Pedagogical Institute, 'Athens 2004' and the Ministry of Education.

Finally the decision was in favour of the PE graduates because:

1. They were much closer to Olympic Education because of their studies and because of their experience as athletes. Most of them had experienced the values of Olympic Education better than any other teacher, and it was easier for them to teach them to the pupils.

2. It would be much easier to retrain the 2,000 PE graduates who would be working full-time (i.e. about 20 sessions per week). The alternative would be to retrain many thousands of teachers to teach Olympic Education as part of their timetable, for 2 or 3 sessions per week.

3. The failure or the success of the programme would depend on those 2,000 PE graduates, which would be a great responsibility for them. But, if it was spread over the whole teaching profession, nobody would assume ultimate responsibility.

The Minister of Education promised that, if the programme was successful, those 2,000 PE graduates would find a permanent job in the schools after the Olympic Games ended. Judging that decision in favour of the PE graduates, with the benefit of hindsight, we think it can be said that the success of the programme and the great momentum for its continuance was due to the decision to employ only PE graduates, because: a) they worked hard and with great enthusiasm because they had the responsibility for the success of the programme and b) they exerted pressure on the government after the Olympic Games to keep the promise to appoint them permanently in the schools in order to continue implementing the programme.

How important the Greek state considered the Olympic Education programme to be is obvious from the following actions:

1. 2,000 PE specialists were appointed in order to implement the programme, and a special law was passed in parliament to allow for their employment.
2. A vice-minister was appointed at the Ministry of Education to take political responsibility for the programme, and a special office (the Olympic Education Office) was created at the Ministry of Education to co-ordinate the programme all over the country.
3. A senior PE teacher was appointed in every prefecture to co-ordinate the implementation of the programme in that prefecture (about 64 teachers).
4. Resources were allocated to every prefecture in order for special projects to be created concerning Olympic Education.
5. 180,000,000 drachmas (about 550,000 euros) was given for seminars on the retraining of the PE graduates to implement the programme.

6. The OCOG 'Athens 2004' created a special office to support the programme, and also created teaching materials.
7. 17 books were written, along with other materials, in order to support the programme.

Most of the people involved in the above process in administrative positions were those who implemented the joint pilot programme of the Pedagogical Institute and the IFOSE. This accounts for the harmonious development of the philosophy and the general principles underlying the programme.

It can be said in synopsis that there were five forces behind the introduction of Olympic Education in Greek schools.

a) The International Olympic Academy, which created the philosophical foundation and paved the way for Olympic Education,
b) The International Foundation of Olympic and Sport Education, and its founder Mr. Tzikas,
c) The Pedagogical Institute of Greece, which actually implemented the Olympic Education programme, drafted the memorandum of understanding and made all the positive proposals to the Ministry of Education,
d) The Ministry of Education, which decided to implement the programme in every school,
e) The Organising Committee of the Olympic Games 'Athens 2004', which contributed very significantly to the production of teaching materials (Georgiadis, 2005, pp. 115–135).

Creation of the pilot programme

As was mentioned earlier, the pilot programme was the main force behind the implementation of Olympic Education in Greek schools, because all subsequent decisions on issues concerning the expansion of the programme were based on the pilot programme. This programme may be used as a guide for any other country wanting to introduce Olympic Education into its schools, and that is why it is very briefly presented below.

An invitation was sent to elementary schools all over the country and, from those who showed an interest in participating, 30 schools were chosen using the stratified technique (Cohen & Holliday, 1979, p. 104). That is, the schools represented urban and rural areas, mainland and islands, north and south of the country. Two schools were also selected at random in order to be used as the control group for evaluation purposes. The main limiting factor in choosing only 30 schools was the financing of the programme provided by the Pedagogical Institute. It was decided to use one teaching period per week of 45 minutes, and the teachers used were 25 PE specialists and 5 elementary school teachers. Before the commencement of the programme the teachers were called to Athens to attend a two-day seminar organised by the Pedagogical Institute, with lectures concerning the values and principles of Olympic Education, the content of the programme, teaching methods and evaluation of the programme. The values and principles were those discussed in the IOA and in the seminars organized by IFOSE. The programme started a little late that year, in January 1998.

The Department of Physical Education and Sports Science at the University of Thrace assumed the responsibility of evaluating the programme. The programme was very

successful, even though it lasted only five months (from January 1999 to May 1999). Nearly all the indicators concerning the social behaviour of the pupils showed some improvement. 'Based on the results of this study the conclusion drawn was that the implementation of Olympic Culture in the school curriculum in Greece had a beneficial effect' (Kabitsis et al., 2002, pp. 184–192). The teaching materials used for the implementation of the programme consisted mainly of a book created by the IFOSE called 'Guide to Olympic and Athletic Education' (Mouratidis, Kabitsis, Mountakis, & Mastora, 1998).

The first problem encountered by any educationist who wants to turn a good idea into a sound pedagogical programme is what steps have to be taken in order for the idea to be transformed into a practical plan suitable for introduction into schools. Curriculum planning theorists recommend four steps in planning:

1. Aim and objectives (Values and Principles),
2. Content,
3. Method,
4. Evaluation (Tyler, 1949, p. 1; Wheeler, 1967, pp. 30–31; Mountakis, 1989).

AIM AND OBJECTIVES (VALUES AND PRINCIPLES)

The first question concerns the aims, values, principles and objectives of Olympic Education. This is perhaps the most controversial question of all because of its philosophical nature. The following definition of Olympic Education was given by the Pedagogical Institute and by Athens 2004:

Olympic Education is a pedagogical programme which comprises knowledge, skills, experiences and values which spring from the Olympic Games and the athletic tradition, and taking into consideration elements of contemporary reality, aims at changing the behaviour of the pupils in a socially desirable direction.

We may note that the above definition suggests that every issue of the Olympic Games (or of sports in general) has to be interpreted according to contemporary reality. For example, the problem of amateurism has to be faced according to this criterion – for today and in the near future, many of the top athletes in the most popular Olympic sports are going to be professionals.

Olympic Education, as defined above, is a programme and not a school subject. There are some basic differences between a programme and a school subject. A school subject (e.g. mathematics, geography or history) springs from a particular discipline, which has specific characteristics. On the other hand, a programme does not spring from a specific science, but rather from a particular focus, consisting of specific actions – activities deriving from various disciplines. For example, in the Olympic Education programme, an action may spring from history. The pupils are asked to find the similarities and differences between the modern and ancient Olympic Games. Another action may come from the arts lesson, where the pupils are asked to evaluate posters of the modern Olympic Games. Another action may spring from PE, in which the pupils are asked to organize a championship in soccer, where the winner would not be the side that scored the more goals but the one that made the fewer fouls.

The second, more difficult, question is what the values of Olympic Education are. It seems that there is more controversy here than in its definition. It can be said that there is a tendency by some people involved with Olympic Education to include in the term Olympic Education all the socially desirable values of modern times. One of the most controversial values which some educationists tend to include within Olympic Education values is ecological consciousness. But since ecological issues are only recently being considered, it is doubtful that they are a core Olympic concern. On the contrary, it may be argued that the opposite happens, in that the Olympic Games tend to contribute to the destruction of the environment. Where the Olympic Games are staged, the environment tends to be destroyed to a lesser or greater extent in order for huge new athletic facilities to be constructed. To put it differently, if we want to preserve the environment, we should stop making huge athletic facilities – but this might lead to the Games' decline. Regarding the Winter Games, the protest has been especially intense (see Da Costa 1997, p. 101). So it is not surprising that it is ecological organizations that have been prominent in opposition to the staging of the Olympic Games, together with political parties more closely associated with ecological organizations.

Now, if we agree that Olympic values have to derive from the Olympic Games and the athletic tradition, and not from other institutions, as it is stated in the definition, the next question is about which Olympic Games one is talking about. Historians of the Olympic Games tend to suggest that if somebody wants to look for values he should divide the Olympic Games into three periods:

1. The ancient period, which coincides with the ancient Greek civilization and its values.
2. The revival period and the beginning of the 20th century, influenced by the ideals of Pierre de Coubertin and Victorian athleticism in British public schools.
3. The modern period, stemming from contemporary values.

(Parry, 1988, pp. 81–94; Young, 1988, p. 27; Seagraves & Chu, 1988, pp. 149–150.)

Modern historians agree that there are essential differences between those three periods (Parry, 1988, pp. 81–94). In order to understand this point, two examples will be given. One has to do with amateurism and the other with the participation of women in the Games.

Amateurism did not seem to exist as a term in ancient Greece. Athens and Sparta, which mainly represented ancient Greece, were societies with free citizens and slaves. The free citizens followed no particular profession, but only the skills of war. However, in the revival period, the ideal of amateurism was prominent. Professionals were not allowed to take part in the Games and examples exist of great athletes who were deprived of their Olympic medal because they were accused of being professionals after the end of the Games. And in the modern period, especially in the major Olympic sports, the ideal is in decline. To put it another way, if today a country organising the Olympic Games invited only amateurs to take part, there would be no real Olympic Games.

The other example concerns the participation of women in the Games. In the ancient Olympic Games women were not only banned from participating but even from being present in the stadium as spectators (Giatsis, 1985). In the revival period, the situation was not much better, since in the first Olympic Games no women took part. From the beginning of the 20th century until today there has been a steady growth in the participation of women, with a gradual move towards fully equal participation. In conclusion, it can be

said that the value of gender equality existed neither in ancient times nor in the first revival Olympiad, but that today is it is steadily gaining ground. To put it another way, if women were excluded from the Games today, the Games would decline.

From what has already been said it can be concluded that the values associated with the Olympic Games and sports in general, though few in the number, are very important in distinguishing Olympic Education from other systems.

Values associated with the ancient Olympic Games

Maybe the most lasting and least disputed value of those associated with the Olympic Games is that of excellence. For a person to want to improve himself at all times, to be better, to be the first, using the same means as the others and under the same conditions, is a value associated with sports from the moment of their first appearance, and is likely to remain the same in the future. Without this value of excellence sports could not exist.

Fair play is the next value associated with the Olympic Games. This value can be seen from two sides. The first is the obligation of the athlete to comply with the rules – every contestant has to respect the rules, otherwise the contest cannot run smoothly. But the most valuable side of fair play has to do with the unwritten obligation of the contestants to share the same conditions during the contest.

The third value associated with the Olympic Games, both ancient and modern, closely connected to fairness, is that of justice. It would be difficult for the Olympic Games to have this lasting success or even to survive for just a few years if the contestants were not imbued with this sense of justice. This may seems a little strange to us in our contemporary world, without slaves and with formal justice. But we can imagine what it was like in ancient times, when wealthy people, and even kings, were taking part in the Games – people who saw themselves as being better than ordinary people, and often saw themselves as above the law. In the athletics arena, however, the rules were the same for everybody. The Olympic Games and sports in general have contributed to the promotion of equity, and a wider sense of social justice.

Peace is the next and maybe the most controversial value associated with the Olympic Games. The question here is whether the Olympic Games actually do contribute to world peace. The answer is not as easy as it looks. It is known that in the ancient times the Greeks had institutionalized the truce in order for the Games to run smoothly. In modern times things are more difficult, since truce is not established, so war continues in several parts of the globe even during the Olympic Games. So why is peace still considered to be an Olympic value? We think for two reasons: firstly, because if the wealthy countries are at war the Olympic Games cannot be staged, and this happened in three Olympiads in modern times – 1916, 1940 and 1944, when the Games were to be staged in Berlin, Tokyo and London respectively; and secondly, when the poor countries are at war there are no resources left, or the appropriate infrastructure in the country, for the maintenance of athletic facilities to train athletes, organize games, or even send athletes to the Olympic Games.

Finally, we should mention health as a value often associated with sport and the Olympic Games, ancient and modern. In order to reach his top performance an athlete must be healthy, and the training of the athlete contributes to his health. Despite this, however,

a number of points should be raised here. Firstly, we have to ask what is meant by the term 'health', since there are athletes who achieved world victories while suffering from fatal diseases. Secondly, heavy training and tough competition might well have detrimental effects on the athlete in the short or long term. Thirdly, the strong desire to win may drive someone to use forbidden drugs, which may have detrimental health effects. However, despite the above points, we accept that sports in general contribute to a healthy organism, and that the health benefits of sport are often cited as a reason against doping.

The above-mentioned five values – of excellence, fair play, justice, peace and health – are the most lasting sporting values, stretching through the whole spectrum of from ancient times, the beginning of the 20th century right up to our present times.

Values associated with the modern Olympic Games

One value which nobody seems to dispute today but which did not exist in ancient times (although it is closely related to one conception of justice) is that of equality of opportunity: the same right for everybody to participate. Today it is accepted that anybody – regardless of origin, nationality, ethnicity, religion, ideology or gender – has the same right to take part in the Games. Despite the tremendous differences that exist in the world today (for example, in some countries, women are not allowed to participate) the Games are open to them. This value simply did not exist in ancient times, when only free male Greek citizens were allowed to participate.

A second value associated with the modern Olympic Games is that of understanding and respect which can be seen from two sides: understanding and respect between countries, and understanding and respect between athletes. If we take into account the huge political, social and economic differences between various nations, and the hostility that exists between some of them, there has to be a great deal of tolerance from the political and athletic authorities of each country in order to agree to mutually accepted rules so that the Games can proceed and retain their global international character. The other side of understanding is that between the athletes, coaches, officials, organisers and administrators from so many different countries. A high degree of understanding and respect is needed by everybody in order for the Games to run smoothly.

A third value associated with the modern Olympic Games is that of participation. Even though winning is what every athlete is looking for, only one individual or team can win. However, it cannot be true that the athletes who do not win a medal can therefore find no value in the Games. Simple participation is cherished as a great honour – the pinnacle of some athletes' careers. And, of course, without many "unrewarded" participants, there could be no winners. Unfortunately this value did not exist in the ancient Olympic Games where only victory had value. According to some reports, the shamefaced loser at the ancient Games tried to sneak back into his country or city by back roads in order to avoid being seen (Paulinis, 1928, sec. 26). In our days, if athletes ceased to consider participation to be as important as victory, the Games would go into decline.

In summary, we can suggest that the above are the main values that every Olympic Education programme should highlight and foster: excellence, fair play, justice, peace, health, equality of opportunity, understanding and respect, and the value of participation as well as victory. Although there might remain some controversy about these values

and their justification, it was considered that these eight values command widespread assent. These guiding values are what distinguishes an Olympic Education programme from any other programme (such as religious or political), which also claims to foster social values.

Objectives

After the question of values was settled, more precise objectives were set. These were divided into four areas:

1. Attitudes (towards ancient Greek tradition, the body, participation, nature, etc.).
2. Social Skills (communication with fellow athletes, officials, contestants, media, etc.).
3. Psychomotor skills (development of specific athletic skills, particularly in those athletic events that were not widespread in Greece).
4. Cognitive skills (knowledge about Olympic tradition, Olympic values, about art springing from the Olympic Games, human rights, etc.).

Content

The content chosen in order for the values and objectives to be realised was divided into two main parts, theoretical and practical.

Theoretical Content

The theoretical content included activities concerning:

1. The early forms of athletics (before the commencement of the ancient Olympic Games).
2. Athletics in ancient Greece.
3. Athletics in the Roman and Byzantine Empires and in Modern Greek times.
4. Historical sources from foreign travellers and archaeologists who discovered and described archaeological sites in Greece.
5. The forerunner Olympic Games (attempts to revive the Olympic Games in Greece and abroad before 1896).
6. The modern Olympic Games (from 1896 until today).
7. The Olympic Games of Athens 2004.

Practical Content

Indoor activities

1. Creation of projects.
2. IT skills (contribution to school website, etc.).
3. Athletic activities (intra-school competition, etc.).
4. Artistic activities (wall-painting, photography, dance, etc.).
5. Theatrical activities (drama, improvisation, etc.).
6. Musical activities (choirs, etc.).
7. Literature and poetry (writing of poems, prose).
8. Others.

Outdoor activities

1. Visits to athletic venues, local and national.
2. Visits to archaeological sites related to athletics, ancient and modern.
3. Visits to museums.
4. Visits to cultural centres (theatres, exhibitions, etc.).
5. Visits to athletic and cultural clubs.
6. Visits to libraries, educational institutions, multi media centres, etc.
7. Participation in municipal and (if possible) national events, as volunteers, etc.

Method of delivering the content

Apart from the traditional methods of teaching (presenting, use of slides, video tapes, etc.) more pupil-centred methods were also used. Those methods are not clearly defined, but they are active, co-operative, and interdisciplinary. The pupils, along with the teacher, decide what to do. They do research, make observations, take initiatives, etc.

Evaluation

Even though the programme was a new one and encountered certain difficulties in its implementation (the most important of which was that some of the projects were insufficiently completed), the evaluation showed positive tendencies in most of the variables under investigation. This was due not only to the content and teaching methods but also to the enthusiasm of the teachers who conducted the programme.

The evaluation was performed with the pre- and post-test methods. Statistical tests, such as frequencies, chi-square, t-test for paired and independent groups, one-way ANOVA and the Scheffe test were used for the analysis of the data. The detailed results, which have been published elsewhere, are presented briefly below and show that:

a) pupils' knowledge of the Olympic Games improved greatly,
b) pupils' attitudes were positively affected toward the benefits of exercise,
c) pupils' level of sportsmanship was increased,
d) pupils' attitudes were positively affected towards fair play.

The results also showed that:

e) the beneficial affect of the programme's implementation was stronger in girls than boys,
f) the level of education of the children's parents was one of the most important factors determining their attitudes towards sportsmanship and fair play (Kabitsis et al., 2002).

The final project of each school was sent to the Pedagogical Institute for evaluation and for inclusion in a book, which was used in subsequent years for the implementation of the Olympic Education programme throughout the country (Pedagogical Institute, 2002).

The cooperation of the teachers who implemented the programme with head teachers, the local authorities, their fellow teachers and children's parents, was crucial for success. With the establishment of this cooperation, another essential objective of the programme was accomplished, which was the creation of better links between schools and local communities. The programme also contributed toward improving cooperation between the Pedagogical Institute, the IFOSE and the schools that implemented it.

The programme after the Olympic Games

As was mentioned previously, the promise of the Minister of Education was that if the programme was successful it would continue in the post-Olympic era. Even though the government changed just before the Olympic Games the promise was kept by the new government, although with some revisions. The main problem encountered by the Ministry of Education in the post-Olympic era was in finding the money to support the programme. As was mentioned, 2,000 PE graduates were employed in order for the programme to be implemented – but their contracts expired after the Olympic Games.

The money was finally found from a programme financed by the European Community, called 'training and initial vocational rehabilitation for women' – but some restrictions were imposed. The first was that the name of the programme should be a female one and the second that the content had to be developed around certain areas. In order to meet the first demand the programme was renamed as 'Kalipatira'. Kalipatira was the woman who in ancient times entered the stadium in Olympia disguised as a man in order to watch her son competing there. When her son won the event she ran into the Olympic stadium in order to embrace him. But her clothes fell away and it was discovered that she was a woman. Because it was not permitted for women to attend the Games she was arrested and sentenced to death. But when she said to the judges that her son, three of her brothers, one of her nephews and her father were Olympic winners, the judges cleared her and let her live. It can be said that the name was quite appropriate, and it was a good link between Olympic Education and the new programme.

According to the second demand, the programme had to include themes concerning the equality of the sexes, human rights, multiculturalism, the fight against racism, etc. But all the above were included in the initial content of Olympic Education. So no harm was actually done to the content of Olympic Education, apart from losing its name. One way or another the content of Olympic Education had to change in the post-Olympic era in Greece, anyway. Most of the previous content was focused on the Olympic Games of 2004, and that had to be modified in the light of experience, while other issues might be included or highlighted.

The 'Office of Olympic Education' took the following actions over a three-year period (2005–2008) in order to support the programme.

1. The programme continued in all schools at elementary level for one session per week in the four upper grades.
2. In high schools (13–15 years) the programme was offered as an option for the pupils, on condition that there were PE teachers specially trained to teach it.
3. In the autumn of the 2006–2007 school year, 1,600 PE teachers, mainly those who were working in Olympic Education, attended a five-day seminar of eight sessions per day in order to be more familiar with the new demands of the programme.
4. 1,500 projects were financed in schools in the year 2007–2008, with 4,000 euros each.
5. There was one senior PE teacher responsible in each prefecture for the coordination of the programme – i.e. 64 PE teachers all over the country.
6. Four new books were written as part of the programme, one for the teachers and three for the pupils.

The end of the programme

Even though there was moderate optimism that the programme would remain as part of the curriculum, most probably at the primary level, in the three upper grades for one session per week, suddenly at the beginning of the school year 2008–2009 the Ministry of Education removed it from the school curriculum, after appointing all the graduates who had been involved with Olympic education as physical education teachers in the schools in permanent positions. Since, as was mentioned earlier, the system in Greece is very centralized, all schools had to follow that directive. Even though no official explanation was given as to why the programme was removed, four reasons may be given:

a) lack of funding,
b) lack of political will,
c) lack of pressure from those teachers who had implemented the programme, after they were given permanent jobs,
d) lack of pressure from the wider public, because, in the post-Olympic era, there was widespread public opinion that Greece had spent a lot of money on the Games, and there was little appetite for spending any more.

In our view, both during and after the present serious financial crisis, there is no likelihood of reviving the programme.

AFTERWORD

If a future historian were to be asked, 'What did the Greeks do that was different or important when they staged the 2004 Olympic Games?' the answer would be 'The introduction of Olympic Education into all schools of the country from the age of 6 up to the age of 18 for one session per week'. All the others things which today are considered by many as very important, like the modern stadium, the unique roof of Kalatrava, the new high speed roads, the new airport, the opening and closing ceremonies – all these things will be forgotten with the passing of time, because they will be repeated and even improved by other countries staging the Olympic Games in the future. Indeed, the efforts of Beijing for 2008 already completely dwarfed all previous achievements in this regard.

However, the introduction of Olympic Education to the whole of the educational system was a first for Greece, and one of the main achievements of the Olympic Games. Its abandonment was both disheartening and regrettable for all those who, alongside the athletes, had striven to achieve success and a permanent legacy.

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EXPLORING FACTORS INFLUENCING OUTCOMES OF A FIVE-WEEK YOUTH EXPEDITION IN THE HIMALAYAS USING THE SAIL TRAINING PROGRAMME SELF-ASSESSMENT TOOLKIT

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ABSTRACT

Much evidence to link youth expeditions and gap years with a range of outcome benefits for participants exists, but to date, there have been relatively few insights into what exactly brings about these reported outcomes. A modified version of the Sail Training Voyage Toolkit (2011) was used to evaluate outcomes of a five-week British Exploring Society youth expedition in the Himalayas. Data generated from 22 participants completing the modified Sail Training Voyage Feedback Form at the end of their expedition were complemented by data from 16 interviews conducted during weeks one, three and five of the expedition.

Key factors identified by the participants which had influenced their learning were: (1) Other Young Explorers, (2) being involved in making decisions and having choices, (3) having time to learn at their own pace; time to get comfortable with people; being able to talk with other people (to make connections); (4) group leaders, and (5) wild camping. Data from 16 interviews supported these outcomes, while the physical challenges (of climbing peaks) and cultural interaction with local people were highly valued aspects of the expedition. Participants were more aware of risks and more confident about safety issues and taking risks after the expedition. These important outcomes may be transferred to future expeditions, higher education or employment. Personal development and training organisations should consider these findings.

Keywords: youth; expedition; British Exploring; Sail Training Toolkit; Himalayas

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INTRODUCTION

There is a growing body of evidence to link youth expeditions and gap years with a range of outcome benefits for participants, but to date, there have been relatively few insights into what brings about these reported outcomes. The Sail Training International Programme Self-Assessment Toolkit (2011) provides a framework for making connections between sail training practices and outcomes for participants. Based on relevant research in the areas of youth development, experiential learning and adventure education, the Toolkit sets out a model for youth development through sail training. It includes an outcomes-based feedback form which can be used to gain further insights into the factors which influence outcomes for participants. This study used a modified version of the Sail Training Voyage Toolkit (2011) to evaluate outcomes of a five-week British Exploring Society youth expedition in the Himalayas.

Background to Expeditions

Evidence for personal gains from Outdoor Education, Outward Bound and Adventure Education began to be published by a number of authors through the 1970s, 1980s and 1990s (Barrett & Greenaway, 1995; Hattie, Marsh, Neill, & Richards, 1997; Hopkins & Putnam, 1993; Loynes, 1999; Miles & Priest, 1990; Wurdinger, 1997). The effects of wilderness experiences on the individual and on groups have been also been extensively reported (e.g. Friese, Hendee, & Kinziger 1998; Gass, 1993; Sakofs, 1992), and in most cases shown to have positive outcomes.

British Exploring Society (BES), formerly The British Schools Exploring Society, is a UK based charity located at the Royal Geographical Society in London and was founded in 1932 by the late Surgeon Commander G. Murray Levick, a member of Scott's last Antarctic expedition of 1910–13. It is one of the longest running organisations of its kind, which for over 80 years has organised exploratory expeditions for young people to remote regions with leaders drawn from universities, teaching, medical professions, industry and the services (see Allison, Stott, Felter, & Beames, 2011; Stott, Allison, & Von Wald, 2013). The 1970s and 1980s saw the British overseas youth expedition initiated by BES transform from a product exclusively for the socio-economically privileged into one catering for a 'much larger range of children of varying social backgrounds and academic abilities' (Grey, 1984, p. 17). Kennedy's (1992) 10-week overland expeditions to the Sahara desert with unselected inner city youth from Liverpool was an early example, where he claimed that expeditions had a major influence on the social and moral development of the members.

A recent literature review (Stott, Allison, Felter, & Beames, 2015) analysed 35 post-1990 key publications which met the criteria: youth expedition; duration exceeding 14 days, self-propelled, and based overseas or out-of-state and demonstrated how the outcomes of expeditions fitted into Greenaway's (1998) model of personal growth. Greenaway (1998) adapts a model originally developed by Giges and Rosenfeld (1976), which he terms the 'four arrows' model. As Greenway notes, "personal growth can be viewed as making new connections in any of several directions" (p. 25). Accordingly, the four arrows model represents the ways in which a person may develop during a given educational experience:

- **upward** to achieve one's full potential;
- **outward** to make contact and encounter others;
- **inward** to increase our awareness of who we are, and what we want, need, sense, feel, think, and do;
- **and downward** to touch earth, to be grounded, and to connect (Greenaway, 1998, p. 25).

Greenaway, argues that this model lends structure and definition to the typically amorphous term 'personal development'. The literature highlights that emerging research in the area of youth expeditions is primarily based on the results of case studies. While this type of research offers insights, it does not show signs of moving towards wider generalizability across differing contexts. In order to gain further insights and understanding about the benefits and impact of expeditions for participants it seems logical to move towards larger scale research which allows for the investigation of the numerous small case studies against larger data sets to provide evidence of the value of such experiences. With this in mind it is useful to consider parallel work which is ongoing in the field of Sail Training.

Sail Training

Sail Training International (STI) was established in its present form in 2002, but its history dates back to 1956. Its purpose today is the development and education of young people through the sail training experience, regardless of nationality, culture, religion, gender or social background. STI is a registered charity (not-for-profit organisation) and has worldwide membership and activities. In 2011 it published its Sail Training Programme Evaluation Self-Assessment Toolkit (Sail Training International, 2011) which describes a youth development model derived from relevant research and sail training practices. The model has a focus on the process that connects the purposes of sail training with factors that contribute to, and constitute evidence of, positive outcomes for young people. The model presents a "common language for youth development through sail training" (p. 5). Figure 1 shows the Sail Training International Model.

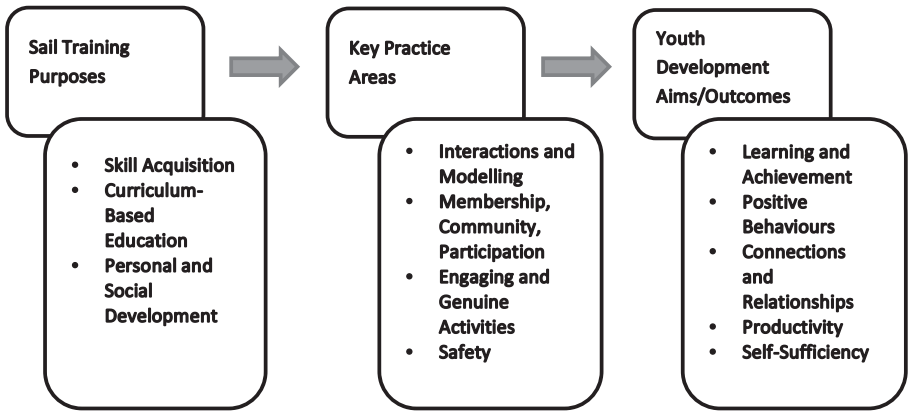

Figure 1. The Sail Training International Model: Youth Development through Sail Training (Sail Training International, 2011, p. 7)

British Exploring Society

British Exploring Society (BES) is also a personal development charity which strives to develop personal and practical skills that are of genuine long-term value to those taking part. Under the heading 'Adventure with Purpose', BES state "We create unique expeditions to challenge and transform the expectations and future lives of the young people we work with" (http://www.britishexploring.org/our-approach/impact.aspx).

Benefits and impact: The value of youth development activities

Understanding the benefits and impact of youth development activities is in the interest of those who provide these activities. Better understanding could lead to increased programme effectiveness, activities better aligned with stated goals, improved programme marketing and fundraising. Like sail training operators, expedition organisers would greatly value a simple tool that provides 'proof' that their expedition makes a positive difference in young people's lives (Sail Training International, 2011).

The toolkit defines outcomes as "the real benefits and changes that young people experience during or after participating in a sail training programme" (p. 36). Since these benefits and changes are difficult to measure, the toolkit suggests different indicators as a 'proxy' for the outcome. This study used the outcomes-based feedback instrument from the toolkit, modified for use with expedition participants, in order to provide evidence for outcomes (benefits and changes) experienced by participants on a youth expedition.

This study aimed to assess the applicability of the Sail Training Programme Evaluation Self-Assessment Toolkit (Sail Training International, 2011) mentioned earlier and presented in Figure 1, to a British Exploring Society five-week expedition in the Himalayas.

Objective 1: to evaluate the learning and benefits to students undertaking a five-week Himalayan expedition – students complete post-expedition questionnaires modified from the toolkit.

Objective 2: to explore and test the findings from the questionnaires through interviews.

Objective 3: to synthesise the current data, compare with previous literature on expedition outcomes and youth development and consider the wider use of the Toolkit in different youth development contexts.

METHODS

Expedition Organisation

The 24 Young Explorers on the British Exploring Ladakh 2013 Expedition were split into three groups (known as 'Fires') for the duration of the expedition, each with two leaders plus one floating assistant leader. One of the fires consisted of five university students (one leader was a university academic) while the other two fires consisted of 9 and 10 school age students (age 16–18) respectively. Fires camped, cooked, travelled, climbed peaks and undertook science projects together for the whole of the five-week expedition (see

Table 1). In addition, unattached leaders included the Chief Leader, Deputy Chief Leader and two medical doctors who oversaw planning, safety and general organisation of expedition logistics to support the fires. Ethical approval for the study was granted by the author's University's Ethics Committee in July 2013.

Table 1. Expedition Itinerary

Phase/days	Expedition Activities
Phase 1 (days 1–3)	Arrive and acclimatise in Leh (3500 m). Camping. Local shopping, learning local cooking skills
Phase 2 (days 4–7)	Travel from Leh to base camp. Slow acclimatisation from 3500 m to 4800 m over four days, ~300 m climb per day.
Phase 3 (days 8–31)	At Base camp. Science and mountaineering activities. River studies, meteorology, geology, botany, glaciology. Visiting glaciers at 5400 m and climbing peaks up to 5995 m.
Phase 4 (days 32–35)	Travel back to Leh in one day, 2 nights camping, cleaning & packing equipment. Last night in guest house. Fly back to UK.

Data Collection

Data were gathered from a variety of sources: surveys of 22 participants via post-expedition feedback forms; feedback, stories and narratives of six participants via three interviews in the first, third and fifth (final) weeks of the expedition; and photo/written journals kept by the researcher.

The Sail Training Voyage Feedback Form is based around the five youth development outcomes (right hand box in Figure 1). The form (which can be found in Sail Training International, 2011, Appendix I) has nine questions for each of the five outcomes. The questionnaire has not yet been tested for validity and reliability as insufficient numbers of completed questionnaires are currently available.

The Expedition Feedback Form used in this study was a modified version of the Sail Training Voyage Feedback Form. For example, the term 'voyage' was replaced by 'expedition', skipper was changed for leader and crew for other Young Explorers, so that all questions were relevant and grammatically consistent and meanings consistent with a five-week Himalayan trekking and mountaineering expedition (see Figure 2).

Young Explorers were invited to complete the Expedition Feedback Form on the return flight home, but due to illnesses, only 22 post-feedback forms were returned. Based on indicating their willingness at the start of the expedition, six Young Explorers were selected, two (a male and a female) from each fire, to take part in three interviews in the first, third and final week of the expedition. Interviews were conducted in a tent away from the other expedition members and questions were broadly based around the five Sail Training youth development outcomes seen in the right hand box in Figure 1. Interviews were recorded and transcribed after the expedition. Interviews were conducted on a one to one basis with the researcher and lasted 10–15 minutes each. Interviewee C (Maya) was only interviewed in week one due to illness. All 16 interviews were transcribed and comments which linked to specific items in the feedback form were identified and marked.

Post-Expedition Feedback Data

Figure 2 summarises the post-expedition feedback form results.

	Post-expedition Feedback form	Post mean score	Post max score	Post min score
	Learning & Achievement			
1.1	**I got to practice and learn a new skill (or two or three) during the expedition – something I did not know before.**	**3.4**	**4**	**2**
1.2	**I learned something new about trekking and mountaineering during the expedition.**	**3.5**	**4**	**2**
1.3	**I learned something new about living in wild areas.**	**3.4**	**4**	**2**
1.4	I did something I did not think I could do before.	2.7	4	0
1.5	I learned something about being with people and being part of a group.	3.3	4	1
1.6	I learned about being in a team and what role I can play.	3.3	4	1
1.7	I know more now about what I am capable of doing.	3.2	4	1
1.8	**I feel more confident now about what I can do.**	**3.5**	**4**	**1**
1.9	I believe I achieved something during the expedition.	3.7	4	2
	Positive Behaviours			
2.1	**I was able to make a contribution and lead some part of the expedition.**	**3.4**	**4**	**2**
2.2	I have more confidence about my ability to be part of a team and work with other people.	3.0	4	1
2.3	I have more confidence about my ability to lead other people.	2.8	4	1
2.4	I set goals for the expedition and achieved what I wanted to achieve.	2.8	4	1
2.5	I learned how I could be part of British Exploring in the future.	3.0	4	0
2.6	**I successfully carried out my duties on expedition (washing up, cooking, fetching water, etc.).**	**3.5**	**4**	**3**
2.7	I was able to resolve a conflict on expedition (mine or someone else's).	3.0	4	0
2.8	**I know what I do has an effect on others.**	**3.6**	**4**	**2**
2.9	I feel more comfortable asking for help or information.	3.2	4	1

Post-expedition Feedback form		Post mean score	Post max score	Post min score
	Connections and Relationships			
3.1	I learned about caring about other people.	3.0	4	0
3.2	I know now better ways to talk to other people, including people my age and adults.	3.0	4	1
3.3	I can relate my experience on the expedition to what happens at home, in school, at university or in my job.	3.3	4	2
3.4	I learned a skill on the expedition that I will be able to use at home.	3.1	4	2
3.5	I want to do another British Exploring expedition.	2.3	4	0
3.6	**I met some other people who I will try and keep in contact with.**	**3.9**	**4**	**3**
3.7	I want to try and be an expedition fire leader in future.	2.6	4	0
3.8	I now have a better understanding of the consequences of my actions.	2.9	4	0
3.9	**I understand myself better, what I am good at and what I still need to learn.**	**3.4**	**4**	**2**
	Productivity			
4.1	I learned how to participate in a group and am better at it now.	3.2	4	1
4.2	**I volunteered for different jobs on the expedition and learned how to do them.**	**3.4**	**4**	**2**
4.3	**I learned how to help other people when they needed it.**	**3.4**	**4**	**1**
4.4	I think we completed the expedition successfully.	3.3	4	2
4.5	I have a better idea about how to use my time more productively.	3.2	4	1
4.6	I am more comfortable expressing my opinion or describing my ideas.	3.0	4	1
4.7	I can see ways I can do things differently to make a positive contribution at home, in school, at university or in my job.	3.2	4	1
4.8	**I know I want to keep learning new things.**	**3.9**	**4**	**3**
4.9	**I think I can be more responsible for myself.**	**3.5**	**4**	**1**
	Self Sufficiency			
5.1	I learned that I can rely on others when I need to.	3.2	4	1
5.2	**I learned I can rely on myself.**	**3.6**	**4**	**1**

Post-expedition Feedback form		Post mean score	Post max score	Post min score
5.3	I know what things I do well and what things I don't do very well.	3.4	4	3
5.4	I am now better at communicating clearly what I need with others.	3.2	4	1
5.5	**I have a better understanding of the risks associated with wilderness expeditions and am comfortable with taking those risks.**	**3.5**	**4**	**2**
5.6	I feel more comfortable in looking for work or a volunteer opportunity.	3.2	4	1
5.7	I feel more confident in my work or volunteer position.	2.7	4	0
5.8	**I think I can make a positive contribution to a team.**	**3.5**	**4**	**2**
5.9	**I now know what I can to do to be physically healthy.**	**3.7**	**4**	**3**

Figure 2. Post-expedition feedback results for BES Ladakh 2013 Young Explorers (n = 22). Items with mean scores of 3.5 or higher are shaded to indicate those areas where the YE s felt that they had gained

Given that the Likert scale ranged from 0 to 4, all mean values in Figure 2 exceed 2.3 (meaning better than 'OK, a little'). Only 6 of the 45 items had mean scores below 3.0, indicating that the Young Explorers collectively responded with 'good, or some' to 87% of the statements which can be regarded as a positive outcome for the expedition overall.

After each of the five sections in the Feedback Form, Young Explorers were asked to indicate which of seven factors had influenced what they had learned, what had influenced their positive behaviour etc., and then to rank them in importance (Table 2). *Other Young Explorers* was ranked first in four of the five categories, and even in the fifth category it was ranked third. Clearly Young Explorers identify their peers on the expedition as having a great deal of influence on their experience of the expedition across each of the outcome dimensions. Peer learning has been recognised in the study by Williams and Williams (2001) where they observed that children learn spontaneously from each other in everyday activities within the preschool culture. However, to the best of our knowledge this is the first time that peer learning or support has been recognised in the youth expedition context.

Table 2. What helped YE s most to learn, be positive in the group, make connections, be productive and be self-sufficient. The top three under each category are shaded

What helped me most in learning was:	Sum of Ranks	Overall Rank	What helped me most to be positive in the group was:	Sum of Ranks	Overall Rank
Trekking & mountaineering	59	3	Trekking & mountaineering	54	3
Wild camping	71		Wild camping	60	
Fire Leaders	68		Fire Leaders	66	
Chief Leader Team	83		Chief Leader Team	68	
Other YE s	44	1	Other YE s	32	1
Being able to practice	75		Being able to try things out	65	
Having time to learn at my own pace	58	2	Having time to get comfortable with people	51	2
Other	6		Other	0	
What helped me most to make these connections was:	**Sum of Ranks**	**Overall Rank**	**What helped me most to learn about being productive was:**	**Sum of Ranks**	**Overall Rank**
Trekking & mountaineering	74		The trekking & mountaineering	62	
Wild camping	61	3	Wild camping	61	
Fire Leaders	64		Fire Leaders	53	2
Chief Leader Team	70		Chief Leader Team	66	
Other YE s	39	1	Other YE s	54	3
Being able to talk with other people	51	2	Seeing other people be productive	56	
Having time to talk about things by myself	67		Being involved in making decisions and having choices	48	1
Other	2		Other	0	
What helped me most to become self-sufficient was:	**Sum of Ranks**	**Overall Rank**			
Trekking & mountaineering	56				
Wild camping	50	2			
Fire Leaders	56				
Chief Leader Team	73				
Other YE s	42	1			
Learning about opportunities and what people do with them	53	3			
Having to rely on myself at home	59				
Other	0				

Clearly it was felt that bringing together this geographically diverse group of young people from all parts of the UK, with ages ranging from 15 to 25, and placing them in an isolated high Himalayan valley for three weeks, was the most influential factor. This connects well with Beames' (2004a) findings, where he identified five critical elements of an expedition, two of which were 'diverse group' and 'group isolation'. However, what remains unclear is what is meant by 'diverse'. This is in keeping with research by Larson, Hansen and Moneta (2006) on developmental experiences across various organised youth activities, Stott et al. (2013) in expedition contexts and Allison et al. (2007) in sail training.

The other factor ranked first in the 'being productive' category was '*being involved in making decisions and having choices*'. The Chief Leader team deliberately set out to make this expedition belong to the Young Explorers. As far as possible, within certain safety boundaries, responsibility for making decisions about where to go and what to do was devolved to the Young Explorers. In some cases this caused tension, especially with some fire Leaders, who had become used to the daily schedule being determined by the Chief Leader, from when they arrived in the country and during the travel/acclimatisation phase from Leh (3200 m) to the base camp (4850 m) which took around 12 days. Having the young people make decisions can take much longer, involves negotiation rather that telling, can lead to making 'wrong' decisions (in the eyes of more experienced leaders) and sometimes false starts. In his second interview, John stated that he had "*learnt to be more organised because he had had to go back to recover an object left behind*" (John 2, 6:25–6:30). This is an excellent example of experiential learning (Miettinen, 2000). In the case mentioned by John, 'going back' was a 5 km journey each way, sufficient to stick in his memory for some time and for it to be recalled in the second interview. Allison and Von Wald (2010) noted that "*in order for such experiences to be of educational value we argue that creating space for students to make mistakes and to explore (in literal and metaphorical terms) is of crucial importance*" (p. 1).

Ranked in second place in Table 2 were: having time to learn at my own pace (for learning); having time to get comfortable with people (positive in the group); being able to talk with other people (to make connections); fire leaders (for being productive, although 'seeing other people be productive' was ranked a very close fourth place); and, wild camping was ranked second in the 'what helped me most to become self-sufficient' category. For the improvement of personal effectiveness, an expedition based wilderness programme seemed to be of relatively more value (mainly on account of the impact of the wilderness environment) than a centre based adventure programme (Greffrath et al., 2011). On the basis of comments in the interviews, it may be interpreted that having time to learn at their own pace, to talk with other people, to see other people being productive (sometimes with the support and encouragement of their fire leaders) and to wild camp are the result of modern life denying young people uncluttered time and space to think, reflect, talk and observe, and the expedition created these spaces which the young people found both unusual and valuable (Allison, 1998). In his third interview Harry said he "*had time to reflect on things in the (beautiful) environment, for example by the river in the morning*" and "*considers his mind is always doing things back at home, but finding the solitude very pleasant*" (Harry 3).

Again, Allison (1998) emphasised the importance of this solitude and time for reflection.

Since this expedition took place in a high altitude Himalayan valley surrounded by peaks in the 5500–6000 m range, it is not surprising that trekking, mountaineering and wild camping were cited as influential in helping learning, making connections and being positive in the group (Table 2). Investigating the experiences of adolescents on an expedition to New Zealand's sub-Antarctic, Orams (2015) found that five interrelated themes emerged from the data: experiential learning; uniqueness of the setting; uniqueness of the experience; sharing with others; adventure; and sense of accomplishment. These findings are consistent with both previous research on the experiences of adolescent participants in other wilderness-based outdoor education programmes, and those of our study. All tasks, including trekking, climbing peaks, pitching and striking camps and cooking were carried out in the same fires. In her second interview Debbie …

"*enjoyed getting to the summit as a team. The challenge made the attainment more rewarding*",

and Jim (in his final interview) cited …

"*reaching the glacier*" and "*climbing Tanglan La*" (a 5700 m peak)

as the highlights of his expedition, thus confirming the influence of trekking and mountaineering as important elements of the expedition. In her final interview Jo chose as one of her expedition highlights …

"*the peaks – and the sense of accomplishment after being in the first and fastest group to climb one of the peaks*" and was "*happy that all the members in her group got to the top*".

Climbing a peak is rewarding, but climbing one with a group you have been living with for the past three or four weeks seems to be even more rewarding. It adds something different and special to the achievement. Interestingly, Greffrath et al. (2013) found that a centre-based adventure program improved communication abilities, productiveness and competition within the group more than an expedition based wilderness programme, except that 'group morale' was in favour of the expedition-based wilderness program, which showed a medium effect ($d = 0.5$).

To summarise, analysis of this part of the Feedback Form along with contributions from some of the interviews has highlighted some key factors which the Young Explorers believed influenced their learning, ability to be positive in the group, to make connections, to be productive and self-sufficient.

Six Case Studies: Feedback data and interviews

Comparison of the feedback form data of the sample of six Young Explorers more or less reflects the expedition mean scores with only minor exceptions. In Learning and Achievement, the six Young Explorers felt that they had first 'achieved something during the expedition' (five of the six gave the top score of 4 to item 1.9), second that they 'felt more confident about what they could do' and that they had 'learnt something about trekking and mountaineering', and thirdly they had 'learned about being in a team and knew more now about what they were capable of doing'. They cited the 'Other Young Explorers, trekking and mountaineering' and the 'Fire leaders' as having helped them most.

In terms of positive behaviours, the six Young Explorers felt that first 'they knew what they did had an effect on others', second that they felt they had 'successfully carried

out their duties' (washing up, cooking, fetching water, etc.), and thirdly they felt able to 'resolve a conflict' on the expedition. They cited the 'Other Young Explorers, trekking and mountaineering' and 'having to get comfortable with people' had helped them most. In terms of connections and relationships, the six Young Explorers felt that first they had 'met some other people who they will try to keep in touch with', second that they felt they 'understood themselves better', and thirdly they 'felt able to relate their experience on the expedition to what happens at home, in school/university etc.' They cited the 'Other Young Explorers, Fire leaders and being able to talk with other people, wild camping and having time to talk about things' had helped them most. On the final point about being able to relate their experience on the expedition to what happens at home, in school/university, Johnston et al. (2014) examined how participants reported being affected by a trip to the Antarctic Peninsula, particularly in terms of later decisions regarding learning, professional lives, and environmental behaviour. Influences noted by respondents in their study included effects on choices made in relation to academic pursuits and career paths, as well as development of their environmental values through increased awareness of tourism impacts, Antarctic region sustainability issues, and global issues such as climate change. Hickman and Collins (2014) also studied the operation and impact of expedition participants' trans-expedition reflective practice on structuring and optimising the transfer process so that outcomes of expeditions offer positive benefits to participants' general lives.

In terms of their productivity, the six Young Explorers felt that first they 'knew they wanted to keep learning new things' and they could now be 'more responsible for themselves', second that they felt 'they could see ways of doing things differently to make a positive contribution at home, in school/university' (cf. see Hickman and Collins, 2014), and thirdly they had 'learned how to help other people when they needed it and to participate in a group better'. They cited that the 'Other Young Explorers, being involved in making decisions' and 'having choices' had helped them most. Finally, in terms of their self-sufficiency, the six Young Explorers felt that first they had 'learned to rely on themselves', second that they felt 'they could make a positive contribution to a team' (cf. Greffrath et al., 2011) and 'knew what they could do to be physically healthy', and thirdly they had 'better understanding of the risks associated with a wilderness expedition and felt more comfortable taking those risks', and they 'knew what things they do well and not so well'. They cited that the 'Other Young Explorers, wild camping and trekking and mountaineering' had helped them most.

Linking Feedback data to interviews

Table 3 shows where there were links between the Young Explorers Feedback Form Top Rated (Table 3A) and Second Rated (Table 3B) items and the interview data. Parentheses indicate pseudonym, interview number and time (minutes and seconds) in the interview when the statement was made.

Table 3. Links between YE Feedback Form Top Rated (3A) and Second Rated (3B) items and interview data. 3C shows other items mentioned by interviewees as impacting their experience

		Interviewees					
3A: Top	Item No.	A	B	C	D	E	F
	1.9		*		*	**	***
	2.1		*		***	*	**
	2.8						
	3.6	**		*	**	**	*
	4.8						
	4.9						
	5.2						
3B: Second	Item No.	A	B	C	D	E	F
	1.6	***			**		
	1.7						
	2.6	*			**		
	3.9				*	**	
	4.7				*		
	5.8				**	*	
	5.9	*			*		
3C: Other		1.3	1.1		1.1	2.7	1.1
Items		1.5	1.2		1.2	4.5	1.8
		1.6	1.3		1.5		2.4
		2.7	2.1		2.5		3.4
			3.1		3.6		4.5
			4.1		4.1		
			5.4		4.2		
					4.3		
					5.1		

Note: * = interview makes reference to item once; ** = interview makes reference to item twice; *** = interview makes reference to item three times

In their review, Stott et al. (2015) used Greenaway's Four Arrows model (Greenaway, 1998) to help understand, from the literature, how personal growth can be viewed as making new connections in four directions: (1) upward (achieve one's full potential);

(2) outward (to make connections and encounter others); (3) inward (to increase awareness of who we are), and (4) downward (to touch earth, to be grounded).

With particular focus on the factors that Young Explorers believed influenced their experience of the expedition, interview data provided additional insights about the feedback data for each of the outcomes. Excerpts from the interviews emphasise some aspects of the feedback forms and offer specific detail and examples about what was happening from the Young Explorers' perspectives.

In Learning and Achievement (see items in Figure 2), John commented upon how the teamwork was developing …

"*I think ... like ... when we started a few people weren't, like, doing as much as they could and a few people were doing a bit more ... but as it's gone on and everyone's kinda found, like what their role is and their strengths within the fire, so you find people helping each other out for bits that their not so good at ... I think it's developed a lot ...*" (John 1).

Debbie said that …

"*getting the stoves working is definitely a difficult skill, they are quite temperamental but I think together as a fire we've learnt how to get them working ...*" (Debbie 1).

Debbie had also learnt about some of the plants and animals that lived around her at base camp, as well as the people too …

"*I've definitely learnt a lot about the people in my fire ... um, some of them I didn't know, hadn't even met them before we came on the expedition ... and I now know a lot about them, through living with them 24/7 ...*" (Debbie 1).

With reference to camp duties, by the middle of the expedition Jo commented …

"*I think its settling down into more ... I'm good at this job so I'm going to do it more, rather than, kind of, everyone has a go at everything ... a few people are good at cooking, and they like cooking ... I've been sorting out stoves quite a lot ...*" (Jo 2),

and Debbie stated that …

"*it was all about recognising that not everyone has the same feelings as you ... once everyone realised it was going to be different for every person, it became a bit easier ... because I think I was trying to organise food for everyone, and that's probably a bit silly ... because actually if you get more voices in, then you hear, then it all works a bit better ...*" (Debbie 2).

These quotes illustrate the second of categories proposed by Stott et al. (2015), outward growth (to make connections, encounter and learn about others). This includes connectedness to others (Allison, 1998, 2000, 2005), a sense of community (Andrews, 1999), interpersonal skills (Beames, 2003), interpersonal growth (Beames, 2004b), social adjustment (Bobilya et al., 2009), avoiding loneliness (Stott & Hall, 2003), motivating others, leading through consultation with others (Stott & Hall, 2003), increased sociability and responsibility (Watts et al., 1992, 1993a, 1994), living with a diverse group of people; learning centred around diverse community (Takano, 2010) and extending the lessons of the group (Allison et al., 2011).

In terms of positive behaviours (section 2 of the feedback form), items 2.1 'I was able to make a contribution and lead some part of the expedition', and 2.3 'I have more confidence about my ability to lead other people', Jo said …

"*I think I've become more confident, because I was put in charge ... for a period of about four days I think ... I planned the two ... kind of ... day trips we did ... doing science*

and I think it went relatively well … so that's given me a bit more confidence …" (Jo 2) and "*our group split up … so we (me and one other) were navigating for the entire third day which was really tiring, but nobody really questioned our decisions …*" (Jo 2).

Jo's comments find support in the literature as they show evidence of personal reflection (Allison, 1998, 2000, 2005; Allison & Von Wald, 2010; Andrews, 1999; Rea, 2006), connectedness to self (Allison, 1998, 2000, 2005), greater understanding of herself (Beames, 2005) and the navigation which Jo refers to shows evidence of learning from difficult experiences (Takano, 2010). Beames and Stott (2008) identified outcomes of a 10-week expedition to Costa Rica as becoming more self-resilient and self-aware, more confident leading and working with others.

Section 3 of the feedback form was about connections and relationships (Figure 2). With reference to item 3.9 "I understand myself better, what I am good at and what I still need to learn", Debbie said …

"*when to give people space and when to try and help them yourself … it's easy here to … when someone's not feeling very well … to always get involved, and you know, ask them things … when actually, sometimes people just need a bit of space here …*" (Debbie 1).

This statement suggests that Debbie has increased her ability to control emotions (Stott & Hall, 2003; Watts et al., 1992) and reflect on herself and actions (Allison, 1998, 2000, 2005; Rea, 2006). In her final interview Debbie said …

"*what's made this trip so special is the people … like when you spend so much time with a group of people you get very close very quickly, so spending time just learning about people, hearing them talk about their lives back home … and it brings you even closer I think …*" (Debbie 3), and "*getting out of our comfort zones together definitely binds people … when you have experiences, um together … like I'm never gonna have experiences with any other group of people … like, quite the same so the bonds are never going to be quite the same*" (Debbie 3).

This statement suggests that Debbie has increased her connectedness to others (Allison, 1998, 2000, 2005), her sense of community (Andrews, 1999), and her interpersonal skills (Beames, 2003). In terms of productivity, with reference to item 4.2 'I volunteered for different jobs on the expedition and learned how to do them', in the final interview Jim said …

"*since the last interview … I've been persuaded* (talking with the fire leader) *… to step up to the plate a bit more … so yesterday, I volunteered to represent my fire at a whole expedition discussion*" (Jim 3),

and linking to items 4.7 and 4.8 (Table 3) Jim went on to say …

"*rather than sitting on Facebook on my phone for ten minutes before going to bed, I'll read a book … the first few days of the expedition, when we were doing nothing, I'd be reaching for my phone … but now that compulsion's gone … if I can stop that compulsion to play an app or whatever … I can actually get up half an hour earlier and read some more books …*" *(*Jim 3).

Here Jim has shown increased sociability and responsibility (Watts et al., 1992, 1993a, 1993b, 1994) volunteering to represent his fire at a whole expedition discussion. In terms of self-sufficiency, with reference to item 5.9 (Figure 2), John commented …

"*it gets so cold at night, and warm during the day, you have to be careful to … like … put on enough sun cream, or you can burn quite a bit … then you have to keep your personal hygiene levels up, because it could be quite easy to kind of just not … not do too*

much about them but you got to keep on top of yourself … so you stay healthy really … don't wanna fall ill …" (John 1).

This is was supported by Stott & Hall (2003) who reported a statistically significant change in expedition participants' self-reported assessment of their personal hygiene before and after a wilderness BE expedition in NE Greenland.

Other themes not explicitly covered by the feedback form but which emerged strongly from the interviews were (1) physical challenge is important, (2) exposure to the local culture was valued, (3) the expedition seemed to have given participants an appetite to undertake more travel and trekking/mountaineering.

With reference to physical challenge, John said …

"*it has been more of a physical challenge (the past week) because we've been 500 m higher … I think it's good to challenge yourself, to see what you can do … you want to be able to kind of summit things, make sure you can carry the met box all the way up … I think that's been quite a highlight for me …*" (John 2).

Asfeldt & Hvenegaard (2014) summarised the common critical elements of educational expeditions into five broad categories related to: activities; new environments; intentional processing and reflection; group experiences; and physical and mental challenges. In this statement, John confirms that the physical challenge was a highlight for him. Since the Sail Training Toolkit was designed for use in sailing, it is not too surprising that the physical challenge was less of an emphasis in sailing, whereas the physical challenge referred to by Young Explorers in these interviews was about climbing peaks, carrying loads, dealing with altitude, which would not have featured on board a ship.

With regard to culture, Debbie said …

"*It was just … um … was really good to get a bit of culture, um to see the culture and the people and um, interact with them a bit because obviously we've been very isolated for a long time, so that was definitely really good …*" (Debbie 3).

John stated that …

"*we're visiting a few of the villages … which I think is, like, another really important part … to see the culture 'cos you don't really get it too much when you're up here … like we saw one goat herder and that's about it for, like, the culture side …*" (John 2).

In one study, 94% of expedition participants reported that their understanding of other cultures had increased as a result of their experiences (Sheldon et al., 2009, pp. 42–47) and this is backed up in this study by the experiences of Debbie and John in these statements. Finally, with reference to gaining an appetite to undertake more of this, Jim said …

"*I do wanna go backpacking in south east Asia, that's something I really wanna do now … is take a year out between a degree and a masters or PhD … and … work for six months, earn the money … spend six months maybe India, Bangladesh, Philippines, Tokyo … Shanghai …*" (Jim 3).

Traditionally studies in experiential learning have tended to concentrate on participant outcomes, and Ewert (1983) likened the elements and processes involved in outdoor education to a "black box", where "we know something works, but we don't know how or why" (p. 27). Beames' (2004a) study aimed at finding out what was inside the black box, and his work highlighted, as critical elements in a 10-week expedition to Ghana with Raleigh International, the importance of (1) diverse groups (2) living in isolated environments, (3) Changing groups and moving to a new physical setting, (4) self-sufficient

living conditions and (5) physically demanding activities. In this study, all but the third of these critical elements have been confirmed with new evidence. In the BES Ladakh 2013 expedition, since it was much shorter in duration, there was no attempt made to change the groups in mid-expedition. If this had been done, it would have been interesting to have evaluated the effect it had on Young Explorers post-expedition evaluations. Having said this, groups were moving to new physical settings either daily (during the acclimatisation journey and in mid-expedition) or at least every few days. This facilitated the attainment of some of the outcomes such as self-sufficiency, climbing peaks (seen as highlights and physical challenges) and working as part of a team.

CONCLUSIONS

The Sail Training International Programme Self-Assessment Toolkit was used to evaluate outcomes of a five-week youth expedition in the Himalayas. Data generated completed at the end of the expedition were complimented by data from 16 interviews conducted during weeks one, three and five of the expedition.

Self-reported data from 22 modified Sail Training Voyage Feedback Forms completed at the end of the expedition showed that participants were positive in a range of skills, behaviours, relationships and self-sufficiency. Key factors identified by the participants which had influenced what they had learned, what had influenced their positive behaviour etc., were (1) Other Young Explorers, (2) being involved in making decisions and having choices, (3) having time to learn at their own pace (for learning); time to get comfortable with people (positive in the group); being able to talk with other people (to make connections); (4) fire leaders, and (5) wild camping. Data from the 16 interviews provided further evidence for these outcomes, but in addition having a physical challenge (i.e. climbing peaks) and some cultural interaction with local villages and in Leh, were highly valued aspects of the expedition.

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THE NATURE OF SPORT AND ITS RELATION TO THE AESTHETIC DIMENSION OF SPORT

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ABSTRACT

In order to discuss the aesthetics of sport I shall start with some metaphysical considerations: instead of using the notion of essence (definition) of sport, understood as a set of necessary and sufficient conditions, I shall try to base these considerations on the notion of the nature of sport. In my understanding, the nature of sport is a very basic phenomenon that lies at the origin and shapes the history of sport. It is a technology of training and mastering physical skills valued for themselves. Now, the aesthetic dimension of sport is based on the technically valuable qualities of sports, which are the consecutive properties of sport. Such qualities are present in all types of sport, not only in the so-called 'aesthetic sports' (Best) or 'performances' (Suits). Finally, I advance a thesis that although sport is not a form of art, its aesthetic dimension is closer to the nature of sport than its ethical dimension.

Keywords: sport; art; technology; skills; aesthetic; purposive; metaphysics; Best; Suits

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I love baseball. You know it doesn't have to mean anything, it's just beautiful to watch.
Woody Allen in Zelig (1983)

INTRODUCTION: SOFT METAPHYSICS OF SPORT AS A GROUND FOR SPORT AESTHETICS

It is possible (and perhaps even common) to enjoy some aesthetic appreciation of sporting activities. Such appreciation even leads some theoreticians to treat sport as a form of art, and – logically enough – athletes as artists. Aesthetic experience is a function of two variables: a subjective aesthetic attitude and an objective aesthetic object. I shall analyse the latter; and my question is thus *what* could be aesthetically appreciated in such activities

as running or skating? This question belongs rather to metaphysics than psychology, and leads to the problem of those qualities of sport activities that could serve as a ground for an emerging aesthetic value. As *de gustibus non est disputandum*, the stress is on inter-subjectively identifiable qualities of activities that form the basis of aesthetic value judgements, and not on the judgements themselves. The term I will use here is *technically valuable qualities*[2]; they are a necessary, but non-sufficient condition of the constitution of aesthetic values.

Dynamism, balance, fluidity, symmetry, harmony and rhythm of players' movements are just a sample of such qualities considered in the literature in this field (see e.g. Kuntz, 1974; Cordner, 1984; Elcombe, 2012). Perhaps grace, coherence, expressiveness and psycho-physical unity of players could, at least in some cases, be inter-subjectively acknowledged. But to analyse these qualities and give a full account of their character one has to also investigate the object-the 'substance' in which they are rooted. To paraphrase a maxim of Scott Kretchmar (1988): to do aesthetics of sport one has to do some metaphysics – *soft metaphysics of sport is a precursor to good aesthetics of sport*. But before I start this metaphysical[3] discussion I would like to offer a comparison between sport and art which might lead us in the right direction.

FIGURE SKATING VS. BALLET DANCING: A CASE OF REVERSE ENGLISH

In order to find some significant, essential differences between sport and art, let us compare figure skating-which, among sport events, is as close to art as possible, and ballet dancing-which, among artistic performances, is as close to sport as possible. Furthermore, they share many obvious similarities: both activities exhibit specific physical skills, which play an important function; both display a kind of artistic dimension, including narration, music, costume, etc. I believe it is hard to find many other pairs (comprising of one sport discipline and one artistic performance) that manifest such appealing similarities. If we were able to find any crucial differences here, it should *a fortiori* be applicable in other pairs of this kind. In order to find this difference, I would like to use a means-end analysis, applied by Bernard Suits in *The Grasshopper*. Suits compares and contrasts two types of activities: a make-believe game and a serious impersonation: "Serious impersonators play roles so that they will be taken for the subject of the impersonation, in make-believe the performers take a subject for impersonation so that they can be playing the roles such impersonation requires" (Suits, 2014, pp. 100–101). His example is as follows: "An impostor behaves like a Russian princess in order to be taken for Anastasia, but a player at make-believe chooses to impersonate Anastasia so that she can behave like a Russian princess" (ibid., p. 101). Thus

[2] The conceptual scheme that lies behind some of my aesthetic considerations was elaborated in Ingarden's aesthetic (Ingarden, 1964); the term 'technically valuable qualities' is a version of Ingarden's term 'artistically valuable qualities'; the former has been coined for the purposes of the aesthetics of sport. In Ingarden's theory 'technical mastery' belongs to 'artistic value qualities'; it is interesting that the term 'artistic' on Ingarden's ground corresponds to Best's aesthetic, whereas Ingarden's aesthetic is equivalent to Best's artistic.

[3] For simplicity I shall consequently use the term 'metaphysics'; although perhaps in some considerations (e.g. concerning the different types of properties) the term 'ontology' is more common.

the two similar activities are different in a very crucial respect: "Their means and ends are reversed – by playing the role, the genuine impostor produces a false identity, while a player at make-believe assumes a false identity so that he can be playing a role" (ibid., p. 101). Suits – by means of an analogy taken from another game, the game of billiards, calls this phenomenon of the reversal of the activity's means and ends: the 'Reverse English'[4].

Let us return now to the figure skating and ballet dancing comparison (one might recall here the 1988 Olympics gold-winner Katarina Witt's Carmen routine), and the already indicated two elements of these activities: physical skills and artistic dimension. My claim is that 'Reverse English' occurs here in a very clear form: a ballet dancer uses her physical skills in order to strengthen the artistic dimension of the performance, whereas the figure skater uses the artistic dimension of her performance to exhibit her physical skills. A given jump performed by a ballet dancer during a ballet performance is a tool used for the artistic effect; the music accompanying a figure skating performance (or artistic gymnastics performance) is a tool used for the sport effect: the exhibition of physical skills involved in the performance of a similar jump. *What techniques (figures) should be used in order to enhance the artistic expression?* is an appropriate question while creating a ballet performance; whereas *what artistic means should be used in order to expose the techniques (figures)?* is an appropriate question while preparing a figure skating programme[5]. The sporting goal is thus defined in terms of the exhibition of physical skills (whilst some artistic means might be used to achieve this goal), whereas in art, the exhibition of physical skills is never the main goal, whilst it might be a means to achieve an artistic goal. In contrast to sport, I shall not offer a specific description of the goal in the domain of art, but I believe it cannot be described solely in terms of the exhibition of physical skills without reference to some overriding ideas such as expression, mimesis, aesthetic experience, some specific set of values etc.

If this analysis is correct, it reveals serious teleological differences between art and sport: despite some apparent similarities, the main goals of art and sport performances are essentially different. But my current aim lies beyond the sport/art comparison, and the conclusion is important because it also reveals something crucial for an understanding of the nature of sport.

DEFINITION OF SPORT VS. THE NATURE OF SPORT

Since sport is a social construct (it is a social kind rather than a natural kind) it is historically changeable and to a certain degree depends on arbitrary decisions and institutional

[4] In billiard players' jargon 'reverse English' refers to one of the situations (the other one being 'running English') in which the ball changes its trajectory after collision due to the rotation caused by a special impact of the cue. In Suits' words: "The governing purpose of […] an ordinary billiard ball (as I suppose we may call it) is to depart from the point of impact, whereas the tendency of an Anglicized billiard ball is to *return* to the point of impact" (2014, p. 101).

[5] Imagine, for example, a dialogue between a young skater and her coach. Skater: This composition of Saties is so beautiful that I would like to prepare a choreography to it. Its melancholic mood excludes any sharp, speedy movements. Coach: Let's mix it with some piece of disco music then, because without your triple flip you won't get the high notes! Compare Wright's interesting remark: "In ballet, if we become aware of the movements as difficult techniques that are being performed, the illusion of the dance is lost" (2003, p. 89).

factors. In these circumstances many of the definitions of sport have rather a descriptive character. For example, Suits characterizes his definition of sport (in the form of a set of four requirements that must be met by any game to be called a sport) as a 'more or less arbitrary, since they are simply facts about sport' (Suits, 1988a, p. 14)[6]. This is one of the reasons why placing 'sport' within another category – like 'game' or 'art' – has not been resolved or agreed upon. However, the following considerations do not require an exact definition of sport (nor an exact definition of art either). It is sufficient for some important diachronic features of sport to be understood within the field of the aesthetics of sport. Thus, instead of the concept 'definition of sport' (as a set of necessary and sufficient conditions) I would like to use a different, more speculative concept, namely: 'the nature of sport'. I certainly understand it as being not synonymous with the 'definition of sport', but rather as a characteristic of a phenomenon that lies at the origin of sport, and structures its history – 'arche', 'core' or 'root' (fundamental feature). It is responsible for the dynamic identity of sport, and as an internal purpose of sport is at the top of the hierarchy of any set of its definitional features. This is the way in which I understand the above-mentioned need for a metaphysics of sport.

To start the search for the 'nature of sport' let us follow some remarks of Suits that could be labelled as 'the birth of sport from the spirit of play'. Sport emerges from primitive play, when skills 'come to be valued for their own sake' (Suits, 1988b). It happens, when "skills instead of being instrumental to other payoffs […] themselves constitute the payoff" (Suits, 1988b). Suits illustrates this principle by several thought experiments (called fancifully 'just so stories'), which show that besides the different genesis of its respective skills, all forms of sport are based on the cultivation of physical skills valued for themselves. For example, a plough-pulling wife, after being released from her duties (having been replaced by a more effective horse) might want to continue practising these skills after hours (Suits, 1988b).

These brief remarks on sport made by Suits, are, perhaps, not sufficient to construct a full theory of sport, but are instructive enough to grasp the very basic, explored fundamental feature of sport. In my view this represents the *technology of the training and mastering of physical skills valued for themselves*[7]. This idea is present, I believe, in the tradition of calling some sports 'arts' (in a similar sense): 'the art of archery', 'the art of running' etc. Since the term 'art' is ambiguous (especially in the context of sport/art comparison), to avoid possible misunderstandings I shall prefer to use the term *technology* rather than the term *art*.

Any serious cultivation of physical skills generates the need for rules, but rules, on the other hand, generate skills, thus the history of sport is governed by a feedback mechanism: skills generate rules, then rules generate new skills, and so on. Both rules and judging techniques are primarily a response to the need to evaluate skills, and they are derived from specific skills. The first need in designing sport-rules is to provide an opportunity for the evaluation, comparison, development, etc. of the physical skills. Only subsequent

[6] Similar characteristics apply, for example, to the four features of sport in its paradigmatic form (Boxill, 2002, pp. 2–3).

[7] Although with in the concept of the nature of sport the emphasis is entirely on physical skills, it does not follow that mental skills do not play an important role in sport. The mastery of physical skills is not just a physical matter, e.g. they are often controlled by one's mental capacity.

amendments[8] might increase the aesthetic dimension of a given sport. In this respect the history of sport resembles the history of any other kind of technology: its functionality becomes prior to an aesthetically pleasing design.

Physical skills in sports manifest themselves in actions that are fundamentally movements (running, jumping, shooting), and the basic qualities that could be regarded from the aesthetic viewpoint must be qualities of these actions. The actions as such belong to the metaphysical category of processes, whose qualities are different from qualities of subjects that are bearers of these processes (Ingarden, 2013). Thus the beauty of an athlete's body as such, or the aesthetic dimension of a sport arena – although they accompany a proper sport event – are not taken into account in this view. The focus is on the qualities of the *processes*, such as jumping, running, playing soccer etc., not on qualities of the *bodies* (that are jumping, running, etc.) nor the sport *venues*. Now, it is important to note that these qualities are something objective – they are qualities of objective processes.

BEST SUITS, SUITS BEST – THE TWO TYPOLOGIES OF SPORTS

Now, in our interlacing metaphysical-aesthetic study, we may go back to aesthetic considerations. There are a lot of different typologies of sports based on different criteria, but in the context of the aesthetics of sport two of them are relevant. According to Best's typology, the first type of sports – *purposive sports* – is defined as follows: "The purpose [goal] can be specified independently of the means of achieving it as long as it conforms to the limits set by the rules or norms" (Best, 1978, p. 104). "A purposive sport is one in which, within the rules or conventions, there is an indefinite variety of ways of achieving the purpose which defines the character of the activity" (Best, 1978, p. 104).

This definition corresponds with Suits' account of games. According to Suits, the lusory goal (winning) "can be described only in terms of the game in which it figures"; whereas a game (not an institution of a game) is understood as a prescriptive use of constitutive rules – a limitation imposed on the means by the rules. Because we are now considering the scope of sports (and not games in general), we might say that Best's category of 'purposive sports' is a *prima facie* equivalent to Suits' description of those games that are sports; the two categories are perhaps co-extensive.

The second category of sports distinguished by Best is that of *aesthetic sports*. In this group "the aim cannot be specified in isolation from the manner of achieving it […]. A (gymnastic) vault is not just 'getting over the box': rather, the manner of achieving the aim is crucial'; 'an aesthetic sport is one in which the purpose can be specified only in terms of the aesthetic manner of achieving it'" (Best, 1978, p. 104).

In the first stage of Suits' philosophical development we can find a theory of sport as a sub-field of games (Suits, 1988a, pp. 9, 14). Later, Suits changed his theory, and the article *Tricky Triad: Games, Play and Sport* presented a more complex view: not all

[8] After presenting a handful of examples illustrating modifications of rules directed towards satisfying spectators' considerations, Cordner concludes: "It is arguable that our concept of sport, perhaps unlike that of our ancestors, is in part a concept of that which is to be seen and evaluated from a spectator's point of view" (1988, p. 32).

sports are games, but there also exists another type of sports, namely performances. Thus, there are two distinctive types of competitive sport events: refereed events (games) and judged events (performances). The difference between games and performances – non-game sports – lies in the manner their respective skills are generated. Games generate skills by erecting barriers to be overcome. They are governed by constitutive rules; victory is not determined by the artistry of actions, but is determined by the effectiveness of actions. Performances, on the other hand, generate skills by postulating ideals to be approximated. They are governed by the *rules of skills*; the jury's task is to evaluate the degree of approximation of a given performance to an ideal (Suits, 1988b).

Now, what is the relation between Best's aesthetic sports and Suits' performances? Again, it is very probable that these categories are coextensive, but at least terminological differences between the two formulations are greater than in the case of purposive sports/performances. According to Suits, the notion of pre-lusory goal cannot be applied to performances (this problem was discussed, among others, by Suits, 1988, Kretchmar, 1989). But if we understand the lusory goal in games as a goal saturated with the constitutive rules, we might, by means of analogy, understand the lusory goal in performances as a goal saturated by the rules of skills. Thus the 'postulated ideal' should be understood as something close to the 'lusory goal for performances'; and rules of skill in the context of performances are understood as something close to an 'aesthetic manner'. So, again, Suits' and Best's descriptions of the second category of sports are very similar.

Now, we are in a position to juxtapose these two apparently parallel typologies. Apart from some minor conceptual differences (which are not the main topic here), they both divide sports into two identical categories[9], both dealing with the description of the goal (in terms of means), and rules as limitations of the means.

Table 1. Purposive sports/Refereed sports (Games)

X	Type of sport	Characteristics	Examples
Best	Purposive sports	The aim can be specified independently of the means of achieving it as long as the means conform to the limits set by the rules.	football, track and field, climbing, squash, orienteering
Suits	Games; refereed events	Generate skills by erecting barriers to be overcome; constitutive rules limit the means permitted in achieving the goal.	football, hockey, boxing, golf

[9] Whether the purposive/aesthetic division is mutually exclusive is a debatable problem; compare for example the following two different opinions concerning ski-jumping: "In aesthetic sports, such as […] ski jumping, a successful performance depends in part upon the manner in which the sport-specific goals are pursued" (Loland, 2002, p. 92); "the scoring in ski-jumping awards some marks for distance (purposive), and some for style (aesthetic). So ski-jumping is a straightforward mix of Best's two categories" (McFee, 2004, p. 91). But because we are at present considering a controversial set of ski-jumping and perhaps a few other 'hybrid' sports, however interesting in itself, the set is too small to undermine our main line of argument.

Table 2. Aesthetic sports/Judged sports (Performances)

X	Type of sport	Characteristics	Examples
Best	Aesthetic sports	The aim cannot be specified in isolation from the manner of achieving it.	gymnastics, diving, figure skating, tramполining, synchronised swimming
Suits	Performances; judged events	Generate skills by postulating ideals to be approximated; governed by the rules of skills.	gymnastics, diving

ARE 'AESTHETIC SPORTS' REALLY MORE AESTHETIC THAN 'PURPOSIVE SPORTS'?

Now, an intuitive suggestion is that an aesthetic dimension of sport is comparatively more related to the domain of aesthetic sports (performances). It is not incidental that an aesthetic sport – figure skating – was chosen for comparison with art. Best claims that in purposive sports aesthetics is incidental, whereas in aesthetic sports aesthetics is necessary to define their character (since the aesthetic manner of achieving a goal is taken into account while judging).

However, some questions arise here: are the aesthetic qualities of aesthetic sports a necessary and inherent component of these sports? Or are the aesthetic qualities of purposive sports only incidental to them? Although Best's terms 'aesthetic sports' and 'purposive sports' are grounded in some essential features of respective types of sports, they could still be misleading. For both types of sports require achieving a purpose, and the aesthetic dimension can be found in both of the types. In these circumstances I propose to use the terms 'quantitative' and 'qualitative', which, perhaps, are more neutral.

An analogical criticism also applies to Suits' analysis – although his terms do not refer directly to aesthetics, the context might also suggest that one type of sports – 'performances' or 'judged events' – is more aesthetically 'saturated' than the other type. According to Suits, in football, "victory is not determined by the artistry of […] moves but by their effectiveness in winning games. […] diving and gymnastics competitions are no more games than are other judged competitive events, such as beauty contests and pie-baking competitions" (Suits, 1988b).

But the distinction is in fact based on different kinds of skills that occur in a given type of sports; aesthetics is not a paramount consideration here. The crucial point in this distinction is that different kinds of skills require different ways of evaluation. 'Qualitative' and 'quantitative' should be understood as referring to the judging techniques generated by the respective skills. Judging – either in a 'quantitative' or a 'qualitative' way – is just the solution to a certain problem: the need for the evaluation of some skills. Rules applied in the evaluation of skills are tools that are invented in order to compare, as well as train and master physical skills valued for themselves. In fact, 'aesthetic' is understood in the context of judging aesthetic sports as a 'skilful manner', or a 'manner in accordance with certain rules of skills'. But *aesthetic* in the 'skilful manner' sense does not mean a*esthetic* in the

sense of 'realizing high positive aesthetic values'. According to Wright, "aesthetic criteria could be easily re-described in a purely technical language" (2003, p. 87). One might even design a 'perverted' aesthetic sport, in which the jury evaluates the achievement of certain aims in the prescribed manner, in as ugly a way as possible. Of course our aesthetic sports bear aesthetic values, but the relation between the two meanings of aesthetic needs some clarification, because it is not a relation of identity. In fact, *aesthetic* (as well as *artistic*) is an ambiguous term, doing double duty (Wright, 2003, pp. 88–89).

To have a real insight into the aesthetics of sport, one should examine each discipline with respect to the occurrence of particular technically valuable qualities, and finally, its possible aesthetic qualities. I believe every kind of sport activity – regardless of whether it is purposive/aesthetic – contains some qualities from the first category. Thus, paradoxically, there is not an *a priori* reason for claiming that 'aesthetic sports' are 'more' aesthetic than 'purposive sports' – as different kinds of technically valuable qualities occur in both types of sport[10].

There is no simple pattern of relation between a particular discipline of sport and the aesthetically valuable qualities that occur in this discipline. Perhaps it is possible at least to grasp some tendencies, e.g.: the aesthetic generated in 'aesthetic sports' appears to be more conventional – conventional rules of skill define postulated ideals, and at the same time define directly which qualities of performance are to be evaluated more highly than others. On the other hand, the aesthetic generated in 'purposive sports' appears to be more 'natural' (i.e. less conventional) – and is based on the search for maximum efficiency in order to overcome obstacles. Compare, for example, some standards in gymnastics to the everlasting beauty of a foot race. This could even raise the problem of kitsch in sport – according to W. Welsch (2005) "the sports which directly strive to be aesthetic are in danger of producing events which for an educated sensibility come close to kitsch. Take ribbon gymnastics as an example. […] Or imagine a skier who only tried to ski beautifully and not efficiently."

TECHNICALLY VALUABLE QUALITIES AS CONSECUTIVE PROPERTIES OF SPORT

We should now go back to the problem of relation between the aesthetic as 'skilfulness' and the aesthetic as a ground for aesthetic values. In each object one may distinguish different types of properties. An object's constitutive properties are those properties that are mentioned explicitly in a description that is used to identify the object. Thus, the constitutive property of sport in general is: *being a human activity directed towards the cultivation of physical skills valued for themselves*. An object's consecutive or consequential properties are those properties that are somehow included or implied by the object's constitutive

[10] Apart from the technically valuable qualities in sport we may also distinguished another extensive category of qualities that might generate intensive aesthetic response, namely drama-related qualities (sudden twists of the situation during a game, uncertainty, risk etc. – see Kreft, 2012). This category is connected rather with some kinds of competition than with the nature of sport itself; and it is not analysed here. Because competition might occur in both types of sport, the second category of these qualities might also occur in both types, although the most spectacular occurrences of these qualities take place in games like soccer.

properties. Consecutive properties depend on and are determined (entailed) by the constitutive ones. Finally, the remaining part of the properties of object is accidental.

Now, technically valuable qualities in sport are consecutive properties of sport. Every developed form of training of physical skills provides some technically valuable actions. But there is no 'automatic' transition from technique to aesthetic, and so the aesthetic is thus only an incidental quality of sport. This point is very clearly expressed by Wright: "Technical qualities […] cannot on their own ensure the aesthetic value of a particular movement or series of movements", and "there is no necessary connection between functional and aesthetic qualities" (2003, p. 86). To go back to Suits' example, after some training, the plough-pulling wife's practise will become very skilful and thus might provide some pleasure and satisfaction for the audience, but it will never become as aesthetically pleasing as figure skating. Even the most open aesthetic attitude of a competent audience will not be of help here[11].

To repeat, the aesthetic is incidental to sport (contrary to Best's claim concerning aesthetic sports, but in accordance with his denial of the art-status of sport), but it does take a central position among the incidental qualities of sport. The aesthetic dimension of skilful actions in sport could be called a by-product, something secondary to its nature. There is no entailment here or a necessary consequence, but there is still a very intimate connection between the skilful and the beautiful. This closeness obviously needs some clarification and explanation, but even if a theory explaining this link is missing, whatever is given in an aesthetic experience cannot be undermined. For an aesthetically open person, some skilful actions in sport *are* beautiful, and whilst some combinations of qualities will increase or decrease this effect, a complete account of the aesthetic dimension in sport will require a special casuistry regarding the full complexity of every particular discipline.

It is interesting in this context to compare the position of two axiological disciplines – aesthetics and ethics of sport – as well as their relation. Although there is something ethical in self-realization (obviously linked to the cultivation of skills), the ethical considerations of sport are mainly based in its competitive character. In the viewpoint presented here, competitiveness might spontaneously evolve from the nature of sport, but ethical values are more distant and more incidental to sport than aesthetic values. The aesthetic is simply closer to the nature of sport than ethics. Let us compare, for example, ethical issues in figure skating with the aesthetics of this sport. It does not follow, of course, that the ethical dimension of sport is less important than the aesthetic dimension of sport (especially in an educational context), but – in terms of its closeness to the nature of the activity – the aesthetics of sport is a more central consideration. In this situation we may use the Aristotelian idiom: the metaphysics of sport is the *first philosophy* of sport, whereas the aesthetics of sport is the *second philosophy* of sport. I believe the quotation from Woody Allen mentioned at the beginning of this text could be interpreted in accordance with this remark.

[11] Another issue that might arise here is a moral evaluation of conducting physical labour for one's own aesthetic experience. Sport permits and invites the adoption of the aesthetic attitude, whereas in the case of physical labour this attitude is at least morally questionable. However, this problem – which might be labelled 'the ethics of the aesthetic way of watching physical labour' – is beyond the focus of the article.

CONCLUSION

Guided by the maxim that the aesthetics of sport requires the metaphysics of sport, I have offered the concept of the *nature of sport*, defined as *technology of training and mastering of physical skills valued for themselves.* This phenomenon lies at the origin of sport, and structures its history as well as different definitions of sport. In the light of this theory *the cultivation of physical skills valued for themselves* is a constitutive property of sport, whereas as *the technically valuable qualities of sport* are consecutive properties of sport. The aesthetic dimension of sport might be based on the technically valuable qualities of sport, but there is no necessary connection here. The aesthetic is thus incidental to sport, although it has a central position among the incidental qualities of sport, and is closer to the nature of sport than ethics. The parallel distinctions between aesthetic sports/performances and purposive sports/games do not provide an a priori reason for claiming that members of the first group are 'more' aesthetic than the members of the second group. Although sport is not an art form, either in the purposive or the aesthetic type, in some cases there are obvious resemblances between sport and art (e.g. the pair: figure skating and ballet dancing). However, even in pairs of this kind a fundamental difference, related to the nature of sport might be noticed: there is a reversal of means and goals in these activities.

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EFFECTS OF ONCE-WEEKLY SHALLOW WATER AEROBIC EXERCISE ON FUNCTIONAL PERFORMANCE IN ELDERLY WOMEN

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ABSTRACT

The purpose of this study was to examine the effects of 24-week shallow-water aerobic exercise on functional performance in postmenopausal women. Thirty-seven women aged 60+ (mean age 67.2 ± 4.8 years) were self-selected to a water exercise group (n = 21) or to a comparison group (n = 16). The training consisted of a 24-week (60 min.day^{-1}, 1 d.wk^{-1}) supervised and guided exercise programme that included aerobic and strength training using an aquatic noodle in shallow water (1.2 m). Outcome measures were 30-s chair stand and 30-s arm curl tests, assessed at baseline and 24 weeks. Significant differences between groups were analyzed using Fisher's exact test. At 24 weeks there was a significantly ($p < 0.05$) greater improvement in measure of upper-body strength in the water exercise group. Arm curling improved by 15.8 versus 14.3% in the water exercise and comparison groups, respectively.

Keywords: elderly; water; exercise; performance; women

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INTRODUCTION

As in other countries, the population of the Czech Republic is ageing. Ageing of the population is usually defined as an increasing proportion of old people in the population (old people are individuals in the age of 65 years and more) (Binstock & George, 2011). In the Czech Republic, the proportion of people aged 65 years and over was 17.9% of the total population in 2015, and it is projected to be 23.9% in the year 2030 (Průša, 2015). However, the fastest growing age group will be that of the oldest-old – people aged 80 and over (Rychtaříková, 2011). Because life expectancy has increased in recent years in the Czech Republic, it is becoming increasingly important to find ways to extend active, healthy lifestyles and

to reduce physical frailty in later years. Exercise is an accessible form of prevention of physical decline. An increase in daily physical activity can slow or partially reverse the negative effect of ageing on function and prevent the progression of chronic and disabling conditions (Brady & Straight, 2014). Many different modes of physical activity have been recommended to maintain or improve functional performance, including strength training, aerobics, walking and aquatic exercise (Waller et al., 2016). Functional performance refers to the day-to-day activities that people actually choose and need to do during their normal routines, depending on the limits imposed by their functional capacity (Kocks et al., 2016).

It has been reported that aquatic exercise is therapeutically beneficial for elderly individuals (Matsouka et al., 2012). Buoyancy acts against the body and reduces the load on joints in water. In a systematic review of aquatic exercise in the elderly, Waller et al. (2016) concluded that aquatic exercise appears to be effective in maintaining and improving physical function in healthy older adults. When compared to land-based exercise, aquatic exercise appears to be at least as effective and could be used as an alternative training modality when land-based exercise is not feasible or desired. Moreover, shallow water (1.0–1.2 m depth) aerobic exercise training does not require any specific skill set and is a form of exercise that is popular among individuals who lack confidence or proficiency in swimming (Sherlock et al., 2014). Aquatic exercise classes may have a higher cost than land-based exercise classes, however, and several participants felt that aqua-based exercise is too expensive, which might act as a disincentive (Fisken et al., 2015). For this reason, amongst others, we think that elderly Czechs do not participate in supervised and guided aquatic exercise classes more than once a week. However, there is no evidence of a beneficial effect of once-weekly shallow-water aerobic exercise on functional performance in postmenopausal women.

The purpose of this study was to examine the effect of 24-week shallow-water (1.2 m depth) aerobic exercise on functional performance in postmenopausal women.

METHODS

Participants

This was a quasi-experimental study with repeated measures and water exercise intervention. Participants were selected by using purposeful sampling from women visiting a community center. All participants were approached personally by the researcher and were asked for their participation; confidentiality was promised. 37 physically active (equivalent of 30 minutes of recreational activity 3 days per week) females with an average age of 67.2 ± 4.8 years, who were living independently in their own homes, were selected to participate in this study. Eligible participants were women who were aged 60 years or more, who were physically independent, not currently engaged in a water-based exercise programme, and who were able to understand the trial procedures. Exclusion criteria were as follows: immobility; incontinence of urine or faeces; cognitive disorders (dementia); and inability to perform the proposed tests. Participants were assigned either to an exercise group (n = 21), a group attending the exercise sessions in water, or a comparative group (n = 16) of those who did not want to attend the exercise sessions in water (due to gynecological problems, long travel distance to the swimming pool, etc.) but who volunteered to participate in the study.

Eligible participants were women who were aged 60 years or more, who were physically independent, not currently engaged in a structured exercise programme, and who were able to understand the trial procedures.

The comparison group was asked not to alter their daily routine during the study period.

This study was approved by the Ethics Committee of the Faculty of Physical Education and Sport, Charles University (application no. 172/2012), and written informed consent was obtained from all participants.

Aqua-aerobics intervention

The participants underwent a six-month supervised and guided exercise programme in shallow water (1.2 m depth) once a week (60 min/session, for a total of 24 sessions). The intervention programme was carried out on the premises of the Elementary School of Prague 5, between November 2013 and April 2014. The dimensions of the pool were 25 m × 10 m. The water temperature was around 29 °C. Each exercise session began with a 10 minute warm-up including basic locomotor movements such as water running, hopping, jumping, galloping and leaping, done in multiple directions. The conditioning phase of the aquatic session included 40 minutes of aerobic conditioning, resistance exercise, and flexibility training. The aerobic exercise component consisted of movement patterns and choreography (jumping jack, cross country ski, kicks, hamstring curls, pendulum, rocking horse, twist). The muscular strengthening component consisted of leg, arm and trunk movements using aquatic noodles. The leg exercises were done in a standing position, alternating leg sides, and including hip flexion and extension with knee flexed and with knee extended, hip abduction and adduction with knee extended, heel raises, and hip rotation. The upper extremity exercises were also done in a standing position, and included pushing a noodle under the water using shoulder extensor and triceps bilaterally and shoulder abduction and adduction. For trunk strengthening, participants worked sitting on a noodle. The cool-down component of the programme consisted of slow movement activities and stretching.

Outcome Measures

Body weight (kg) was measured to the nearest 0.1 kg using a calibrated electronic scale (SOEHNLE Professional, model 7801). Height (cm) was measured to the nearest 0.1 cm using a digital stadiometer (Seca, model 274). Body mass index (BMI) (kg/m^2) was calculated using body weight and body height squared. Physical activity level was assessed using a self-report physical activity questionnaire (Freiburg questionnaire of physical activity, Frey et al., 1999). Two components (30-s chair stand and 30-s arm curl tests) of the functional fitness test (Rikli & Jones, 1999) were selected as a measure functional performance. This particular battery of tests was considered to be an appropriate measure of the physiological parameters that are associated with functional mobility in independent older adults and would therefore be targeted in the study's intervention (Botarro et al., 2007).

The 30-s chair stand test, which reflects lower-body strength, involves counting the number of times within 30 seconds that the subject can rise to a full stand from a seated position without pushing off with the arms. Studies have shown that chair stand performance,

a common method of assessing lower-body strength in older adults, correlates well with major criterion indicators of lower-body strength (e.g., isokinetic-measured knee extensor and knee flexor strength), stair-climbing ability, walking speed, and risk of falling (Bohannon, 1995), and it has been found to detect normal age-related decline in strength (Csuka & McCarty, 1985). Further, the chair stand has been found to be safe and sensitive in detecting the effects of physical training in older adults. The participant was instructed to rise to a full stand and return to the original seated position as quickly as possible. The chair rises began with the participant's arms crossed at the wrist and held against the chest. The participant was verbally cued using the command "1, 2, 3, GO", and a stopwatch was started simultaneously with the "GO" cue. Participants were instructed to move at a maximal speed until they either felt the need to stop or the 30-second time limit was reached. The initial trial was followed by a five-minute recovery and a second trial. The 30-Second Chair Stand Test has strong test-retest reliability in older women (R = 0.92; 95% CI 0.87–0.95) and moderate criterion validity (r = 0.71) (Rikli & Jones, 1999).

Upper-body function, including arm strength and local muscular endurance, is important in executing many everyday activities such as carrying groceries, lifting a suitcase, and picking up grandchildren (Jones & Rikli, 2002). The 30-seconds Single Arm Curl Test, a measure of upper-body strength and endurance, determines the number of times a dumbbell (2.3 kg for women and 3.6 kg for men) can be curled through a full ROM in 30 seconds. The prescribed protocol includes holding the weight in a handshake grip at full extension (to the side of the chair) and then supinating during flexion so that the palm of the hand faces the biceps at full flexion. Results of previous studies indicate that the 30-seconds Arm Curl Test is a good predictor of both biceps strength and overall upper-body strength (James, 1999). The participant was asked to sit at the edge of the chair to ensure full range of motion of the elbow joint. Then, the participant was instructed to flex and extend the elbow joint with a 1.8 kg dumbbell in the supinated forearm within 30 seconds. After a demonstration by the researcher, the subject completed a practice trial of two repetitions, followed by one 30-second test trial. The test was performed once for the right and once for the left arm. The number of arm curls performed within 30 seconds was recorded as the arm curl strength. The total arm curl strength was calculated as a mean of scores of both arms. The 30-seconds Arm Curl Test has moderately strong test–retest reliability in older women (R = 0.80; 95% CI 0.67–0.89) and moderately strong criterion validity (r = 0.78) (Rikli & Jones, 1999).

Statistical Analysis

The Kolmogorov-Smirnov test was used to assess normality. For comparisons of initial characteristics between the exercise group and comparison group, the non-parametric Kolmogorov-Smirnov two-sample test was used, whereas the Wilcoxon Signed Ranks test for paired samples was used to compare the pre- and post-intervention values. For the classification of effect sizes a point-biserial correlation (r) was calculated. Cohen's guidelines for r are that a large effect is 0.5, a medium effect is 0.3, and a small effect is 0.1 (Coolican, 2009). Moreover, the Pearson Chi-Square, or Fisher's exact test for small cell sizes, was carried out to assess the difference between groups in a number of participants who showed improvement in some variables. Finally, to determine the effectiveness of the

exercise intervention in water we computed effect sizes using the Odds Ratio (OR). The interpretation of OR is: if the OR is < 1 the comparison group is better than experimental group; and if the OR is > 1 the experimental group is better than the comparison group. The significance level of all statistical tests was set at $p < 0.05$. IBM SPSS 21.0 software was used for calculations and data processing.

RESULTS

The basic characteristics of the study groups are described in Table 1. There were no statistically significant differences between the experimental and comparison groups in any measures at baseline.

Table 1. General characteristics of participants

	Experimental group (n = 21) Median (IQR)	**Comparison group (n = 16) Median (IQR)**	***p* value**
Age (years)	67.0 (9.0)	66.5 (9.0)	0.993
Height (cm)	160.0 (6.0)	161.5 (8.9)	0.410
Weight (kg)	69.0 (12.4)	69.1 (19.0)	0.863
BMI (kg/m^2)	27.6 (5.3)	27.0 (7.6)	0.985
Physical activity (hr/week)	5.4 (2.1)	6.4 (3.8)	0.562

Note: IQR interquartile range. Differences were tested by the Two-Sample Kolmogorov-Smirnov test.

A statistically significant improvement was observed in the 30-s chair stand (25%) and 30-s arm curl (15.8%) tests in the experimental group (see Table 2). In the comparison group there was improvement in the 30-s chair stand test (27.8%), which was the highest improvement of all the measures, and in the 30-s arm curl test (14.3 %). The effect size was always higher in the experimental group than in the comparison group. The effect sizes in the experimental group oscillated between 0.263 and a really high level of 0.607, while in the comparison group it was from negligible 0.092 to 0.416.

Table 2. Functional performance variables in the pre-test and post-test period in two groups

	Experimental group (n = 21)				**Comparison group (n = 16)**			
	Before Median (IQR)	**After Median (IQR)**	**Δ %**	***p* value [r]**	**Before Median (IQR)**	**After Median (IQR)**	**Δ %**	***p* value [r]**
Chair stand (number)	16 (5)	20 (4)	25	<0.001* [0.607]	18 (4)	23 (7)	27.8	0.018* [0.416]
Arm curl (number)	19 (5)	22 (4)	15.8	<0.001* [0.565]	21 (9)	24 (6)	14.3	0.048* [0.349]

Note: IQR interquartile range. Differences between before and after intervention were tested by the Wilcoxon Signed Ranks test. The *r* in brackets is effect sizes calculated as a point-biserial correlation.
* statistically significant difference of level $p < 0.05$

Numbers and percentages of participants who increased their performance, and the ORs, are presented in Table 3. The percentages were always higher in the experimental group than in the comparison group, as can be seen in Table 3. It has been shown that women from experimental group will probably have higher levels of functional performance after completion of aquatic exercise training than women from the comparison group. Nevertheless, this effect was statistically significant only in the 30-s arm curl test (0.135, 95% CI 0.023–0.787), whilst there was also a trend to significance in the 30-s chair stand. These findings could be considered as the most interesting results from this trial.

Table 3. The difference between groups in the number of participants who showed improvement

	Experimental group (n = 21) Number (%)	**Comparison group (n = 16) Number (%)**	***p* value**	**OR (95% CI)**
Chair stand (number)	20 (95.2)	11 (68.8)	0.066[b]	0.110 (0.011–1.064)
Arm curl (number)	19 (90.5)	9 (56.3)	0.024[b]*	0.135 (0.023–0.787)

Note: CI is confidence interval. Differences were tested by the Fisher's Exact test[b].
* statistically significant difference of level $p < 0.05$

DISCUSSION

Surprisingly, both groups showed significant improvements in lower-body muscle strength, whilst the experimental group showed greater improvement in upper-body strength than the comparison group. This is because activities in the water activate the shoulders, whilst the strength of the lower-body is also stimulated on land during natural activity, e.g. walking. All participants were recreationally active, with self-reported activity levels of at least 30 minutes of recreational activity 3 days per week. Walking, gardening and gymnastic exercises were the most frequently recorded activities. Water-based exercises comprise a series of specific movements that use water resistance to generate load intensity (Buttelli et al., 2015).

The aquatic exercise programme in this study included strength training using an aquatic noodle. The resistance exercises with an aquatic noodle consisted of horizontal shoulder flexion and extension, shoulder adduction and abduction, right/left elbow flexion and extension. The aquatic noodle was held in the hands to increase resistance. This might be the reason for the greater improvement of upper-body strength in the experimental group than the comparison group.

The results of the present research are in accordance with the findings of Kieffer et al. (2012) and Sanders et al. (2013) in indicating the significant effects of applying shallow water aerobic exercise on improving lower and upper body strength elderly women. We found that participants who added one hour of shallow water aerobic exercise to their daily routine reported significant improvement in upper-body strength.

Performing activities of daily living, such as rising from a chair or walking up the stairs, is closely associated with the level of muscular strength. Dynamic physical activity programmes in the water may be used to maintain and develop functional performance of the elderly. Certain strengthening exercises performed on dry land may not be suitable for the elderly because of impacts and overloading of joints (Kieffer et al., 2012). Water-based exercise can offer many of the same benefits associated with land based exercises, but water has certain properties that provide a more gentle and welcoming environment for exercising. Buoyancy in water counteracts gravity to support the weight of the subject and decrease the forces put on the joints. Viscosity of water can provide resistance proportional to the effort exerted and with gentle friction enhancing proprioceptive feedback (Alberton et al., 2011). Furthermore, water-based exercise has been associated with pain reduction and it has been proposed that adherence to water-based exercise is greater in the elderly than land-based exercise (Tsourlou et al., 2006).

This research has a number of limitations. Firstly, it suffers from a lack of randomization, which resulted in unequal intervention and comparison group sizes. Although this is appropriate and acceptable for a quasi-experimental design, a stronger defense of the intervention would be made with a truly randomized approach. Secondly, the individuals in this population were healthy recreationally active elderly females; and so future studies might also investigate populations with impaired function, marked physical frailty, or specific chronic conditions, which could further benefit from a shallow-water aerobic exercise programme. Thirdly, we included only female individuals, and so our results may not be generalisable to healthy male individuals.

CONCLUSIONS

It was demonstrated that by participating in supervised and guided water-based exercise training, participants were more likely to increase their performance, possibly resulting in increased activities of daily living. Participants who added one hour of shallow water aerobic exercise to their daily routine reported significant improvement in upper-body strength.

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