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CONTENT

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BJSHS is an international quarterly peer-reviewed scientific journal that keeps sports and health professionals up to date with advances in the fields of sports science, health education and promotion and physical rehabilitation. The journal publishes research articles in the following areas: *Social Sciences* (Physical Education, Sports Coaching, Sports Pedagogy, Sports Psychology, Sports Sociology, Research Methods in Sports, Sports Management, Recreation and Tourism), *Biomedical and Health Sciences* (Coaching Science, Sports Physiology, Motor Control and Learning, Sports Biochemistry, Sports Medicine, Physiotherapy and Occupational Therapy, Physical Activity and Health, Sports Biomechanics, Adapted Physical Activity) and *Humanities* (Sports History, Sports Philosophy, Sports Law, Sports Terminology).

The issues contain editorials, reviews of recent advances, original scientific articles, case studies. In all cases, it is vital that the journal's integrity, independence and academic reputation is not compromised in any way.

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SOCIAL APPEARANCE ANXIETY OF FITNESS PARTICIPANTS

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ABSTRACT

Background. It is known that there are multiple associations between physical activity and psychology for human health. One of these associations is social appearance anxiety. Social appearance anxiety is a feeling of distress associated with the perceived evaluation of one's physical self. Some individuals feel relatively little anxiety over this perceived evaluation, while others are highly stressed. There are many studies on physical activity and anxiety, but fewer studies on the social appearance anxiety. Therefore, the aim of this research is determining social appearance anxiety of individuals interested in physical activity and examining it according to some variables.

Methods. The study group of the research consisted of 38 women (age = 28.53 ± 9.1 years), 190 men (age = 26.43 ± 7.78 years) from four different fitness centres, with a total number of 228 individuals. The data were collected using Social Appearance Anxiety Scale as a data collection tool. Descriptive statistics, *t* test for independent groups and one-way analysis of variance (ANOVA), Tukey's multiple comparison; Kruskal-Wallis *H* test in the group not normally distributed were used as statistical methods for the evaluation of data.

Results. Adolescences and those aiming at losing weight demonstrated more social appearance anxiety compared to young adults and those aiming to keep fit.

Conclusion. It was determined that outgoing individuals demonstrated moderate levels of social appearance anxiety towards physical activity. Social appearance anxiety of individuals did not vary according to body mass index (BMI) and gender, but it varied in dependence age group and reasons for participating in physical activity. Thus it is said that the variables of age and reasons for participating in physical activity are determinant attributes of social appearance anxiety.

Keywords: exercise, fitness, anxiety.

INTRODUCTION

The importance individuals attach to their appearance is a fact recognized all over the world. Therefore, they try a lot of ways to leave a more favourable impression on others and to look attractive, muscular or beautiful (Yousefi, Hassani, & Shokri, 2009). Under the influence of TV shows, women wish to have a slimmer body while men desire to have a more muscular body.

In TV shows where thinness or attractiveness is represented as a cultural value, physical appearance may often take precedence over an individual's thoughts, behaviour or achievements (Cusumano & Thompson, 1997). This leads individuals to wish for an ideal physique and to experience social appearance anxiety (Davison & McCabe, 2005). Mc Candles suggests that social life is based on person's physical attributes and bodily attitudes and emphasizes the psychological importance of body image (Özerkan, 2004).

Theoretical foundations of social appearance anxiety show that individuals seek to create a positive impression in the eyes of others, and it has been suggested that social appearance anxiety appears when individuals feel incapable of presenting a desired image to others (Hagger & Stevenson, 2010). Body mass index (BMI) most likely appears to be positively related to appearance-based social anxiety (Titchener & Wong, 2015). Studies have

shown a positive association between BMI and appearance-based social anxiety in female-only or predominantly female samples (Crocker, Sabiston, Kowalski, McDonough, & Kowalski, 2006; Diehl, Johnson, Rogers, & Petrie, 1998; Levinson et al., 2013). Furthermore, some studies have failed to find the BMI and appearance-based social anxiety association (Levinson & Rodebaugh, 2011).

Social appearance anxiety is a concept that has been recently investigated by researchers in association with participation in sports (Berry & Howe, 2004; Brunet & Sabiston, 2009; Dumciene, Gedviliene, & Mickevicius, 2015; Eriksson, Baigi, Marklund, & Lindgren, 2008; Haase, Prapavessis, & Owens, 2002). Studies conducted in exercise psychology have clearly highlighted the positive effects of regular participation in physical activity on physical and psychological health (Aşçı, 2002; Dishman & Jackson, 2000; Fox, 1997; Paluska & Schwenk, 2000). Particularly studies focusing on the effect of physical exercise on a set of psychological variables have indicated that regular participation in physical activity may have a direct positive effect on such psychological variables as depression (Dimeo, Bauer, Varahram, Proest, & Halter, 2001; Tilindienė, Emeljanovas & Hraski, 2014; McKercher et al., 2009; Mikkelsen et al., 2010; Ströhle, 2009), anxiety (Tarakci, Yeldan, Mutlu, Baydogan, & Kasapcopur, 2011; Martinsen, 2008), stress (Salmon, 2001), self-esteem (Fox, 2000), social self-efficacy (Alemdağ, 2013), body image (Hausenblas & Fallon, 2006) and happiness (Özkara, Kalkavan, & Cavdar, 2015) in normal samples.

As seen above, it is possible to find studies on the appearance anxiety of individuals who participate in physical activity. However, there is no study that investigates the reasons for participation in sports and body mass index of individuals interested in fitness along with their appearance anxiety. Thus, the present study aims to identify the perceptions of individuals interested in fitness sports toward appearance anxiety and to compare their perceptions with respect to gender, age, body mass index and reasons for their interest in fitness sports.

METHODS

Participants. The study group of the research consisted of 38 women ($\bar{x}$ (age) = 28.53 ± 9.1 years), 190 men ($\bar{x}$ (age) = 26.43 ± 7.78 years) from four different fitness centres, with a total number of 228 individuals who completed a questionnaire package that included *Social Appearance Anxiety Scale* and some demographic information. The sample group was just randomly selected from a fitness centre, so women's sample size was extremely lower than men's because men generally prefer such sports centres a lot in many parts of Turkey.

Procedures. This research used a questionnaire as data collection method. The questionnaire is a commonly utilized data collection tool in quantitative research (F. C. Nachmias & D. Nachmias, 1996). The questionnaires were distributed after obtaining the necessary permits from fitness centres' managers. The participation in the survey was voluntary.

Instrument. *Personal Information Form.* The Personal Information Form consisted of five questions related to the independent variables studied in the present research. These were as follows: gender, age, height, weight and the reason for going to the fitness centre (lose weight, keep fit, muscle mass, estc.) In this study, age categories were defined as follows: adolescents, 12–19 years; young adults, 20–34 years; and middle adults, 35–50 years, because most people who used fitness centres usually were in these age groups. Additionally, height and weight measurements were taken using standard protocol (height with a portable stadiometre, weight with portable electronic scales and without shoes) and then BMI (body mass index) was calculated using that data. Finally, research team asked all participants about the reasons for exercising and then they had to sign their answers on the questionnaire. Soon all the information except for height and weight was collected using a questionnaire.

Social Appearance Anxiety Scale (SAAS). The Social Appearance Anxiety Scale (Hart et al., 2008) is a 16-item assessment of anxiety about being negatively evaluated by others because of one's overall appearance, including body shape. Items are rated on an agreement scale from not at all (1) to extremely (5). Research on the psychometric properties of the SAAS demonstrated high test-retest reliability, good internal consistency, good factor validity, incremental validity (e.g., it was a unique predictor of social anxiety above and beyond negative body image indicators), and divergent validity in samples of nonclinical college men and women (Hart et al., 2008; Levinson & Rodebaugh, 2011). Internal consistency reliability in the present study was excellent for women (coefficient alpha = .97) and men (coefficient alpha = .96).

Statistical analysis. The data were collected using *Social Appearance Anxiety Scale* and personal information form as a data collection tool. Independent simple *t* test was used to assess differences between social appearance anxiety and gender, one-way ANOVA was used to access age differences, and Kruskal-Wallis *H* test in the group not normally distributed was used as a statistical method for the evaluation of data. The analysis was conducted using SPSS (Version20). A p-value of < .05 was used as the criterion for significance

RESULTS

Independent simple *t* test was conducted to test whether there were significant differences according to gender in the SAAS points.

Analysis showed that there were no significant differences between social appearance anxiety and gender of participants ($t_{(226)}$= –1.19, $p > .05$) (Table 1).

One way ANOVA was conducted to test whether there were significant differences according to age in the SAAS points. Analysis showed that there were significant differences between social appearance anxiety and age of participants ($F_{(2,225)}$= 3.62, p < .05). In other words, social appearance anxiety of participants was different depending on their age. According to the result of the Tukey's HSD test which was performed to determine which groups made differences between age groups, **s**ocial appearance anxiety of the participants in the 12–19 age group ($\bar{x}$ = 2.02) was determined to be higher than the social appearance anxiety of the participants in the 20–34 age group ($\bar{x}$ = 1.75).

BMI of the participants, Kruskal-Wallis *H* test results taken from the SAAS scores are presesnted in Table 3. Analysis show that there is no significant differences between social appearance anxiety and BMI of participants.

Kruskal-Wallis *H* test results taken from the SAAS scores of participants who came to the gym for different reasons are given in Table 4. Analysis showed that there were significant differences between social appearance anxiety and causes of participants go to the gym (χ^2 (sd = 3, n = 228) = 14.44, $p < .05$). This finding indicates that the reason to go to the gym shows different effects on the social appearance anxiety of the participants. Considering the average numbers of groups, apparently the highest concern seems to be with those who went to the gym to lose weight.

Table 1. **Distribution of the SAAS points by gender**

	Gender	*n*	$\bar{x}$	*Ss*	*sd*	*t*	*p*
SAAS	Women	38	1.70	0.69	226	-1.19	.24
	Men	190	1.84	0.65			

Notes. $p > .05$, SAAS – Social Appearance Anxiety Scale.

Table 2. **Distribution of the SAAS points by age**

	Age	*n*	$\bar{x}$	*Ss*	*sd*	*F*	*p*	Sig. Dif.
SAAS (points)	(1) 12–19	53	2.02	0.68	2–225	3.62	.03*	1–2
	(2) 20–34	138	1.75	0.61				
	(3) 35–50	37	1.77	0.73				

Notes. *$p < .05$, SAAS – Social Appearance Anxie-ty Scale.

Table 3. **The distribution of the SAAS points by BMI**

	Groups	*n*	Mean rank	χ^2	*sd*	*p*
SAAS (points)	Low weight	7	118.50	6.872	4	.14
	Normal	127	110.24			
	High weight	75	118.05			
	Obesity-1	15	109.43			
	Obesity-2	4	195.25			

Notes. $p > .05$, SAAS – Social Appearance Anxiety Scale.

	Groups	*n*	Mean rank	χ^2	*sd*	*p*	Sig. Dif.
SAAS (points)	(1) Lose weight	41	136.61	14.442	3	.00*	1–2
	(2) Keep fit	109	100.47				
	(3) Muscle mass	63	129.52				
	(4) Other	15	92.93				

Table 4. **Distribution of the SAAS points by the reason of attending the fitness centre**

Notes. $p < .01$, SAAS – Social Appearance Anxiety Scale.

DISCUSSION

This study conducted to examine social appearance anxiety of individuals participating in physical activity established that males had higher levels of social appearance anxiety than females but there was no significant difference between social appearance anxiety of males and females. This result is in parallel with those of the study conducted by Altintas and Asci (2005). Dogan (2009) also reported that men had higher levels of social appearance anxiety than women. The present study has also similar results to the study by Alemdag and Oncu (2015) on preservice teacher's participation in physical activity and social appearance anxiety. There may be a number of reasons behind such results. For instance, men are socially expected to undertake more initiatives, and fear and avoidance behaviours that arise due to social anxiety cannot be attributed to the male identity. Therefore, men may have higher social anxiety. However, Villiers (2009) reported that men had lower social anxiety than women. Such dissimilarity between the result of the present study and that of Villiers may be based on national differences in culture and gender relations. Western people are more relaxed communicating with each other easily and this is one type of culture for them, but Turkish society imposes more responsibility to men, thus men usually should be more sociable in Turkey if they wish to communicate with someone. Tha is why possibility of social appearance anxiety on men in Turkey is higher than that in women, and this is an expected result.

Based on the study results, there was a significant difference between Social Appearance Anxiety Scale (SAAS) scores of individuals participating in physical activity in terms of age variable. This difference was visible in the mean SAAS scores of individuals in the age group of 12–19 years participating in physical activity and those in the age group of 20–34 years. This result is similar to that of the study conducted by Alemdağ (2013) on university students. Previous research also lends support to this similarity (Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992; Kessler, Berglund, Demler, Jin, & Walters, 2005). Alemdağ (2013) indicated that students in the age group of 17–19 years had the highest mean score of social appearance anxiety. This may result from the fact that individuals in the age group of 17–19 years still bear the traces of adolescence and have not yet completed their cognitive processes.

In the present study, no significant difference was found between SAAS scores and BMI of individuals participating in physical activity. This result is in parallel with the study by Örsel, Canpolat, Akdemir, & Özbay (2004). This result suggests that social appearance anxiety results from the discrepancy between the perceived and ideal body (Gruber, Pope, Lalonde, & Hudson, 2001; Ogden & Evans, 1996).

The study results revealed a significant difference between individuals participating in physical activity for different reasons (losing weight, keeping fit, looking muscular and others) in terms of their social appearance anxiety. The difference was observed between individuals participating in physical activity for losing weight and those participating in physical activity for keeping fit. Recent research also lends support to this result (Fox, 2000; Krane, Waldron, Stiles-Shipley, & Michalenok, 2001). Given that individuals participating in physical activity for losing weight are currently fat, it is an expected result that these individuals have high social appearance anxiety. Accordingly, it is a normal result that individuals participating in physical activity for keeping fit have low social appearance anxiety since they are currently fit. There are studies on the reasons for participation in physical activity (Kolt, Driver, & Giles, 2004; Jakobsson, Lundvall, & Redelius, 2014; Allender, Cowburn, & Foster, 2006) while the literature lacks a study that discusses these reasons with social appearance anxiety. Thus, the present study is believed to contribute to the literature in this area.

CONCLUSION

All in all, it seems that positive changes occur in the levels of social appearance anxiety of individuals participating in physical activity. On the one hand, physical activity leads to a change in the physical appearance of individuals; on the other hand, this change enables individuals to enhance their self-esteem and to have positive thoughts about the self. As it is clearly apparent that participation in physical activity has numerous benefits to individuals, our most important task is to tell people the importance of physical activity and to set up areas and projects that attract them to physical activity. Moreover, in order to better understand the impact of physical activity on these concepts, such variables as a larger sample group, the role of the parent on sport, the economic condition of the parent and the availability of sports facilities in their neighbourhood should be discussed in future studies.

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EFFECT OF BODY POSITION DURING WHOLE BODY VIBRATION ON ACUTE JUMPING PERFORMANCE

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ABSTRACT

Background. The aim of the study was to investigate the acute effect of whole-body vibration (WBV) during heel raised and standing squat position on squat (SJ) and countermovement jump (CMJ) heights.

Methods. Twenty four physically active sport science students are voluntarily participated in this study. Randomized, counterbalanced, crossover study was used in this study and all subjects completed two trials that were plantar (25–30°) and dorsal (5–10°) flexion squats. WBV exercises were performed on a vibration plate at 26 Hz frequency, 4mm amplitude. Jumping performances were assessed with and without WBV conditions. Subjects executed WBV condition treatment on static plantar or dorsal flexion half squat position (45°knee angle) for 3x60 s with 60 s rest between sets.

Results. There was no statistically significant two-way interaction between treatments and times for SJ and CMJ ($p > .05$). SJ and CMJ after the WBV were significantly higher than without WBV condition ($p < .05$). SJ and CMJ heights were higher than baseline values without WBV.

Conclusion. These results indicate that there were no differences between WBV during plantar and dorsal flexion squat position on SJ and CMJ heights. Regardless of different muscle length squat position during WBV, there were little but significant differences (~1cm) on SJ and CMJ heights after WBV. According to these results it can be said that WBV had a statistically significant acute effect on jumping, but different plantar-flexor muscle length squat position on vibration plate during WBV did not have any effect on jumping performance.

Keywords: whole body vibration, acute effect, body position, jump performance.

INTRODUCTION

Whole body vibration (WBV) is a popular training method of athletic performance for athletes in many sports branches. Vibration is a mechanical stimulus characterized by an oscillatory motion (Cardinale & Bosco, 2003). This training method was developed for Soviet cosmonauts to recover from loss of muscle and bone during immobilization and space flight (Rittweger et al., 2002). During WBV, activation of the leg muscles varied between 12.6 and 82.4% of MVC values (Roelants, Verschueren, Delecluse, Levin, & Stijnen, 2006) and vibration occurring with gravitational changes to the body can reach up to 14 g (Bosco et al., 1999; Cardinale & Bosco, 2003). Muscle contraction and gravity provides a mechanical stimulus responsible for the development of muscle structure in exercise and training (Bosco et al., 1998). It has been hypothesized that low-amplitude, low-frequency mechanical stimulation of the human body is a safe and effective way to improve muscle strength (Cardinale & Bosco, 2003; Torvinen et al., 2002).

The principle of this exercise modality is to perform different type volitional movement on a vibrating platform moving up and down or side to side at different frequency and amplitude. The mechanical action of vibration is to produce fast and short changes in the length of the muscle-tendon complex (Cardinale & Bosco, 2003). This vibration movement evokes a stretch reflex action called tonic vibration reflex that is based on stretch reflex response and this reflex activity

is mainly attributable to muscle spindle Ia fibres (Romaiguere, Vedel, Azulay, & Pagni, 1991). This reflex response excites more motor units than similar movement without vibration and leg extensor muscles (soleus, gastrocnemius medialis and rectus femoris muscles) seem to be caused by vibration induced stretch reflexes during WBV (Ritzmann, Gollhofer, & Kramer, 2010).

Some studies focused on body position during WBV. According to these studies, knee flexion of 90º during WBV is associated with a greater magnitude of vibration to the calf compared to the knee flexion of 30º, and 90 º squat position may be useful for conducting vibration to the calf (Tsukahara et al., 2016). Abercromby et al. (2007) indicated that static squat position caused higher meuromuscular responses compared to dynamic squatting. Ritzmann, Gollhofer, and Kramer (2013) stated that at knee flexion of 60º, forefoot stance can be beneficial for knee extensors and plantar flexors with respect to EMG activity.

Vibration effects mostly on muscle spindle and the knowledge of muscle lengthening during vibration may be a prerequisite for eliciting stretch reflexes (Cochrane, Loram, Stannard, & Rittweger, 2009). However acute effects of muscle length during WBV on athletic performance are not widely discussed in literature. Therefore, the purpose of this study was to assess the acute effect of two different squat positions with short or long plantar-flexor muscle length during WBV on squat (SJ) and countermovement jump (CMJ) heights and our hypothesis was that body position with regard to plantar-flexor muscle length during WBV would affect acute jump performance.

METHODS

Twenty four physically active sport science students at Anadolu University voluntarily participated in this study. Randomized, counterbalanced, crossover study was conducted and all subjects completed two trials that were plantar (25–30°) and dorsal (5–10°) flexion squats with and without WBV, and sufficient time was given between trials. WBV exercises were performed on a vertical vibration platform (Pro 5 Airdaptive Model, Power-Plate®, USA) at 26 Hz frequency, 4 mm amplitude (Figure 1). Trials were carried out on different days and between tests minimum 2 days were given for rest. Each test day started with standard warm-up routines including of concentric, ballistic, dynamic contractions following 5 min of running on a treadmill at moderate intensity. After the warm up, about a 5–10 min resting period was given to subjects, and then jumping performance was consudered as a pre-test measurement. Each subject executed WBV condition treatment on static plantar or dorsal flexion squat position (knee flexed 45°) for 3 x 60 s with a 60 s rest between sets. Three minutes were given after completing WBV and then SJ and CMJ heights were tested with a mat working with a flight time recorder and three trials were performed with a 1 min rest period. Pre-test measurements for exercising without WBV were taken the same way as described above before the WBV sessions. The best of three trials were taken for statistical analysis. Two-way repeated measures ANOVA was used to determine whether there were differences between the values of two treatments with and without WBV over time in SJ and CMJ.

Figure 1. **Two squat positions during WBV (modified from Gojanovic, Feihl, Liaudet, Gremion, & Waeber, 2011)**

SJ and CMJ variables were normally distributed by Shapiro-Wilk's test of studentized residuals ($p > .05$) and there were no any outliers. Mauchly's sphericity was met because sphericity is always met for two levels of a repeated measure factor. All the data are presented as mean ± standard deviation.

RESULTS

There was no statistically significant two-way interaction between treatment (WBV during plantar or dorsal flexion squat) and time (pre or post) for SJ, $F(1,23) = 1.246$, $p > .05$ and CMJ, $F(1, 23) = 0.910$, $p > .05$. According to these results the effect of different plantar-flexor muscle length squat position during WBV on jump heights was not different. Jump heights did not change significantly over time depending on the type of different plantar-flexor muscle length conditions. The main effect of treatment showed a statistically significant difference in SJ heights $F(1,23) = 16.066$, $p = .001$ and CMJ heights $F(1, 23) = 14.502$, $p = .001$ between times. The main effect of time showed that there was a statistically significant difference in SJ and CMJ heights between time points $F(1, 23) = 2.089$, $p < .05$. Bonferroni post hoc test results indicated that SJ and CMJ heights were higher (1.2, 1.4 cm; respectively) than the pre-test values (Figure 2) after WBV regardless of different muscle length squat position.

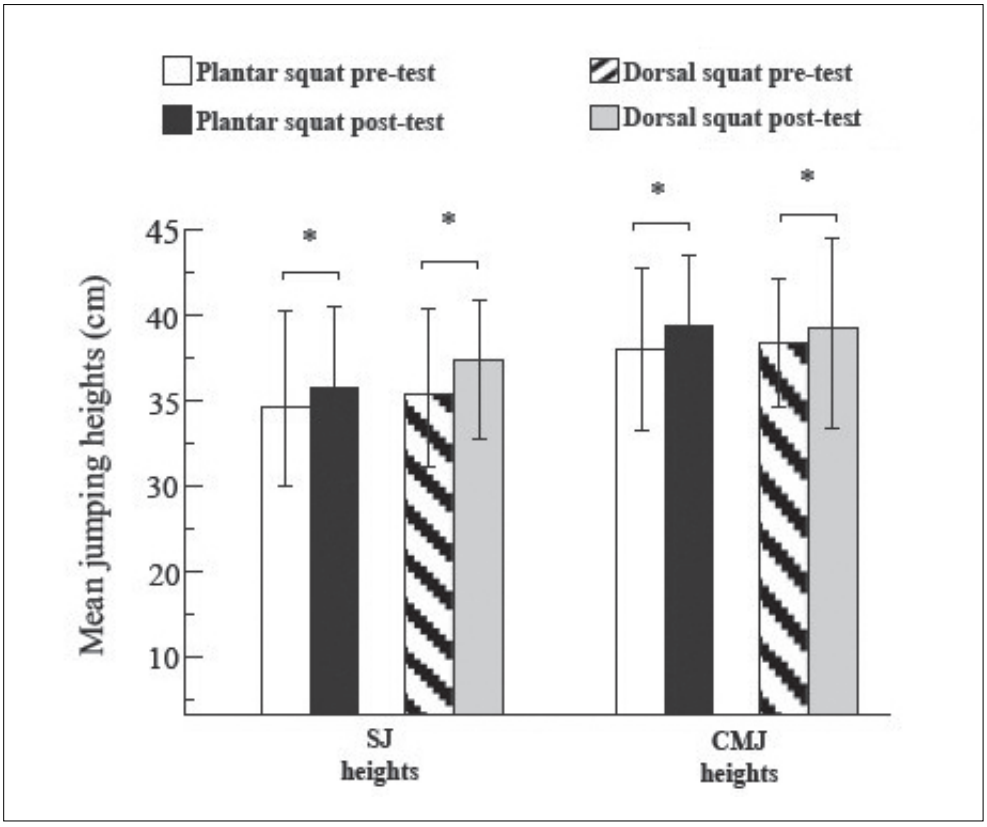

Figure 2. **CMJ and SJ jumping heights before and after WBV in plantar and dorsal squat positions**

Note. * $p < .05$.

DISCUSSION

The main aim of this study was to determine whether there was an effect of WBV treatments with two different body positions on SJ and CMJ heights. The results indicate that there were no any differences between the plantar and dorsal flexion trials on SJ and CMJ heights, but WBV had a small though significant effect on SJ and CMJ jump heights by about 3% (1–2cm) after WBV conditioning at 26 Hz frequency regardless of body position. These results are in agreement with some previous studies. Bullock et al. (2008) found that there were no significant differences in jumping performance after acute application of WBV. Cardinale and Lim (2003) declared that 5 min, 20 Hz (low frequency) acute WBV significantly increased squat jump performance by 4%. At 40 Hz

(high frequency) they found a significant decrease in squat jump (–3.6%) and in counter movement jump (–3.8%) in untrained subjects. Cochrane and Stannard (2005) suggested that 26 Hz acute WBV increased vertical jump performance. Cormie, Deane, Triplett, & Mcbride (2006) especially emphasized that 30 Hz acute WBV increased vertical jumping performance immediately following vibration. McBride et al. (2010) found that an acute bout of static, body weight squat exercises, combined with WBV, increased muscle force output up to 8 minutes post-exercise. Posjkic et al. (2015) remarked that additional external load of 30% bodyweight under WBV at 50 Hz, 4 mm posted superior gains in countermovement jump compared to unloaded WBV.

WBV stimulates plantar cutaneous afferents (Kavounoudias, R. Roll, & J. P. Roll, 1999) and decrease in muscle length causes an increase in motor unit activity (Kennedy & Cresswell, 2001). Muscle EMG activity decreases as the muscle is lengthened and muscle produces greater force in a lengthened state than in a shortened position (Lunnen, Yack, & LeVeau, 1981) at 20º of dorsal and 30º plantar flexion (Vander Linden, Kukulka, & Soderberg, 1991). We did not reach joint angle at dorsal flexion conditions because of the difficulty of this angle during squat with WBV. The position with knees bent at 90º with heels raised maximizes the vibration effect on vastus lateralis and lateral gastrocnemius muscles compared to no heel raised squat position (Di Giminiani, Masedu, Tihanyi, Scrimaglio, & Valenti, 2013). However, the current study did not show differences between these two positions on jump performance. It can concluded that heel raised squat position during WBV does not have an acute effect on jumping heights according to our results. Regardless the squat position, WBV has a little acute effect (~1–2 cm) on SJ heights during dorsal and plantar flexor squat position trials. According to these results it can be concluded that our WBV has a statistical effect on jumping, but muscle length during squat on vibration plate does not have any effect on jumping performance.

CONCLUSION

In conclusion, the current study showed that static squat position with different muscle length of plantar-flexors during 26 Hz WBV did not affect jumping heights compared with the no-WBV condition. Practically, lower frequencies (20–30 Hz) (Cardinale & Lim, 2003), 90º squat position (Avelar et al., 2013; Tsukahara et al., 2016) with heels raised (Di Giminiani et al., 2013) maximizes muscle activity and vibration effect, but squat position with or without heels raised has no effect on jump performance. Besides that WBV affects acute jump performance regardless of short or long muscle length during WBV. In our opinion, although WBV has an acute effect on jump performance, body position with different plantar flexor muscle length during WBV did not have any additional effect on athletic performance. However, further studies are needed to investigate the effect of WBV training using different positions, different vibration frequency and amplitude on field and laboratory exercise performance of lower limb.

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INDIVIDUALIZATION OF EXERTION WHILE MONITORING FUNCTIONAL STATE DURING EXERCISING

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ABSTRACT

Background. Individualization in workloads is important in order to get optimal benefits from exercising and long-term adaptation. Heart rate (HR) monitoring during exercise can be valuable for the feedback formation. The aim of the study was to compare the calculated HR values recommended for individualization of endurance training workloads while taking into account the HR at real or relative rest.

Methods. The participating 76 healthy adults were asked to measure the pulse rate, i.e. HR self-examination at absolute and relative rest states. The results obtained during the study were analysed according to the age and gender by calculating $HR_{Reserve}$ and the recommended intensity of exercising at 50% of $HR_{Reserve}$; 70% of $HR_{Reserve}$; 85% of $HR_{Reserve}$.

Results. Significant difference was found when comparing the averaged values of HR obtained at the real and relative states and even greater difference was observed between relative and real resting conditions in younger groups. When calculating the recommended HR values for exercising intensity, recommended HR values significantly differ depending on whether the real or relative rest states were taken into account. This means that the algorithm for feedback formation should take into account the initial values of HR corresponding to the state of absolute rest, i.e. after 8 hours of sleep.

Conclusion. The HR at relative rest state is different to the real rest state HR and therefore the algorithm for feedback formation should take into account this difference, i.e. the corresponding correction of such HR meanings should be installed.

Keywords: health promotion, cardiovascular system, individualization.

INTRODUCTION

Scientists have been searching for the answer to the questions of what kind of physical activity and what intensity of exercising are the most effective for health promotion (Vainoras & Šilanskienė, 2004; Warburton & Bredin, 2016). Before finding the solution to these questions we must evaluate numerous findings of research as well as compare the different physical loads of fast and long-term adaptation effects. Many of the body's functional systems are very active during exercising, therefore in scientific publications there are various evaluations and suggestions on how to explore appropriate body reaction to various types of exercise (Fletcher et al., 2013; Mendonca, Fernhall, Heffernan, & Pereira, 2009).

Individualization in workloads is important in order to get optimal benefits from exercising and long-term adaptation. Heart rate (HR) monitoring during exercising is a valuable method for the feedback (Kiss et al., 2016). Some degree of HR measuring is necessary as to maintain all requirements of methodology suggested by

scientists (Karvonen & Vuorimaa, 1988), i.e. to calculate HR at rest and to follow HR changes during exercising. The Karvonen formula is used to calculate the heart rate at a given percentage training intensity.

A lot of pulse monitors or feedback providing devices could be helpful in this area if they had such hind algorithms installed in their system. In case where real values of HR at rest are not know or measured the further calculations for choosing the intensity of exercising could be inaccurate. This is because the HR at state of absolute rest, i.e. after 8 hours of sleep, differs from the values calculated at state of relative rest. The aim of the study was to compare the calculated HR values recommended for individualization of endurance training workloads while taking into account the HR at real or relative rest.

METHODS

The participants of the study consisted of 76 healthy adults who had to perform HR self-examination at absolute and relative rest states. In order to evaluate the difference of HR between the real and relative rest participants had to calculate their pulse for 30 seconds at each every 5 days.

The results obtained during the study were analysed according to the age and gender by performing calculations of $HR_{Reserve}$, and the recommended intensities of exercising at 50% of $HR_{Rezerve}$; 70% of $HR_{Reserve}$; 85% of $HR_{Reserve}$. $HR_{Reserve}$ intensity was calculated using Karvonen formula (Karvonen & Vuorimaa, 1988):

$$HR_{max} = 220 - \text{age (year)}$$

$$HR_{Reserve} = HR_{max} - HR_{rest}$$

$$70\%\ HR_{Reserve} \qquad HR_{Reserve} \times 0.7 + HR_{Rest}$$

$$85\%\ HR_{Reserve} \qquad HR_{Reserve} \times 0.85 + HR_{Rest}$$

$$50\%\ HR_{Reserve} \qquad HR_{Reserve} \times 0.5 + HR_{Rest}$$

The statistical data analysis was performed using "Excel 2000" software. Data values are reported as mean values and standard deviations. Changes were evaluated using Student's (*t*) test ($p < .05$ level of significance).

RESULTS

Significant difference was found while comparing the averaged values of HR obtained at real and relative rest state and even greater difference between relative and real resting conditions was observed in younger age groups (Figure 1).

The results were different between subjects less than 35 years old and over 35 years of age. Women's HR at real rest was 58.1 ± 1.8 beats / min., men's – 55.2 ± 1.8 beats /min. The values in the younger groups were lower when compared to the ones in the older groups. HR for women older than 35 years at real rest state was 62.7 ± 3.0 beats / min., for men older than 35 years old it was 59.1 ± 1.2 beats/min. At relative rest the difference in values was also significant. HR at relative rest for women older than 35 years old was 70.4 ± 2.4 beats min., for men older than 35 years old it was 67.7 ± 1.4 beats/min. Women's relative and real HR values were higher than men's HR values, but this difference was no statistically significant ($p > .05$).

Further calculations were aimed at calculating and comparing the values of HR at various recommended intensities of training, i.e. 50% of $HR_{Reserve}$, 70% of $HR_{Reserve}$, and 85% of $HR_{Reserve}$. Results showed that HR in for men younger than 35 years at real rest (126.2 ± 0.9 – 175.8 ± 0.5 time/ min.) and at relative rest (132.2 ± 0.9 – 177.6 ± 0.5 beats /min) were higher than those for men older than 35 years at real (118.0 ± 0.5 – 159.3 ± 0.5 beats / min) and relative (122.3 ± 0.6 – 160.6 ± 0.5 beats / min.) rest in cardiovascular system's training zones. While calculating the recommended HR values in order to choose the intensity of exertion, by evaluating the real and relative rest it can be noted that the recommended HR values during exercise differed significantly.

While analysing the results we can conclude that there are similarities between men and women in age groups. Cardiovascular training zone for women younger than 35 years old which was obtained by taking into account HR values in the real rest ranged from 126.2 ± 0.9 up to 175.8 ± 0.5 beats /min, and obtained by taking into account HR values in the relative rest state ranged between 132.2 ± 0.9 up to 177.6 ± 0.5 beats /min. This comparison revealed that figures obtained by these calculations differed. The same tendency was observed while comparing the results obtained in older groups. For men older than 35 years old cardiovascular training zone according to real rest state it was 118.0 ±

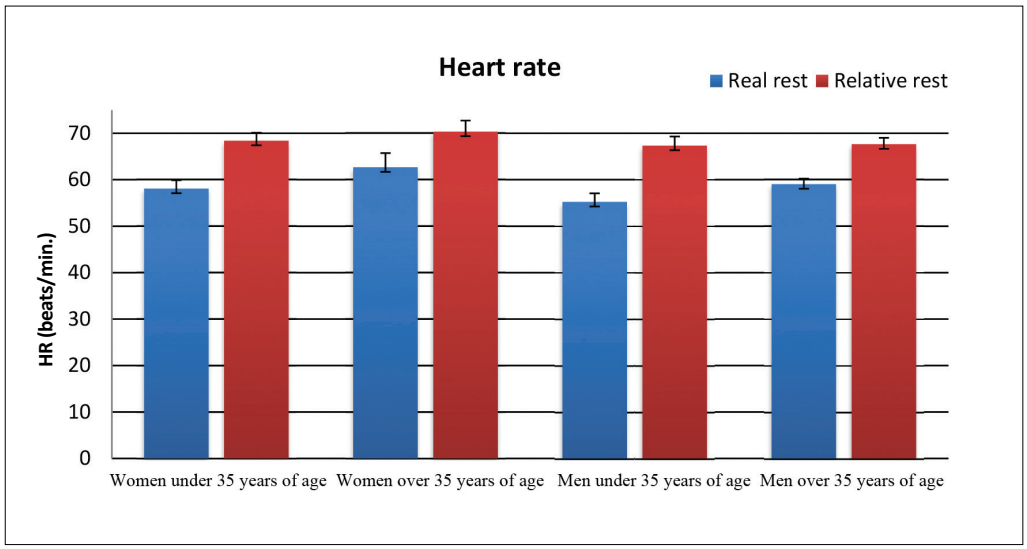

Figure 1. **HR values at real and relative rest states**

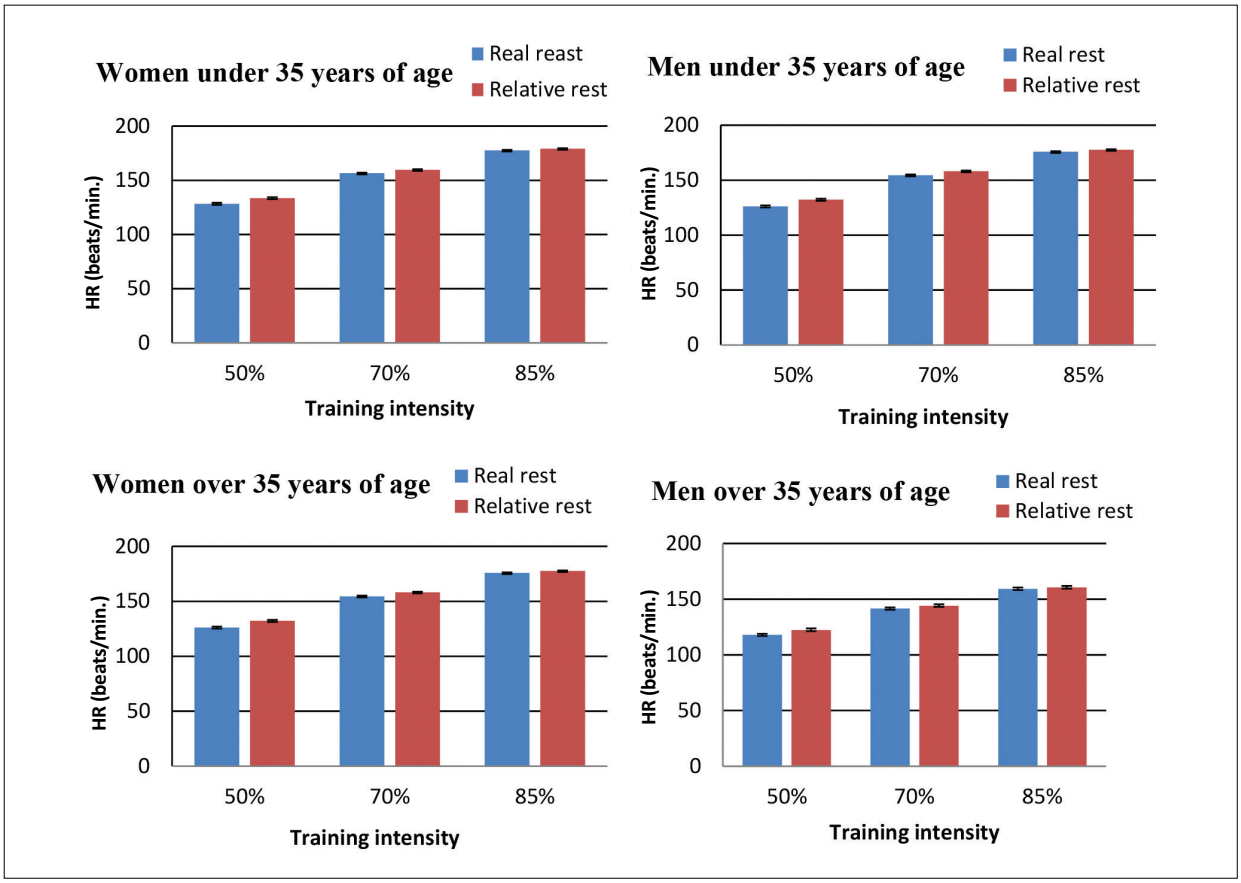

Figure 2. **Values of HR calculated by taking into account real or relative rest states**

0.5 – 159.3 ± 0.5 beats /min and according to the relative rest – 122.3 ± 0.6 – 160.6 ± 0.5 beats / min. For women older than 35 years old the recommended training zone according to the real rest state was 118.8 ± 2.1 – 158.1 ± 2.2 beats / min, while according to relative rest it was from 122.6 ± 1.7 to 159.2 ± 2.1 beats /min.

DISCUSSION

Health promotion by exercising is an important part of healthy life style, however it is also essential to consider the appropriate intensity of exercising (Fletcher et al., 2013; Karvonen & Vuorimaa, 1988; Warburton & Bredin, 2016). In

this study we used guidelines outlined in "The Recommended Quantity and Quality of Exercise for Developing and Maintaining Cardiorespiratory and Muscular Fitness in Healthy Adults" (American College of Sports Medicine – http://www2.gsu.edu/~wwwfit/howtoex.html). In order to choose the appropriate intensity of exercising it is necessary to take HR measurement at rest and also to monitor it during the exercise. Studies have shown that recommended HR values during exercise depend on functional preparedness and the task of the training session (Kiss et al., 2016). The intensity of exercising while HR exceed 50% $HR_{Reserve}$ could be recommended for beginners and the higher HR values should be during exercising within so called "Taget zone" while HR varies in zone from HR 70% $_{Reserve}$ up to HR 85% $_{Reserve}$. Significant differences of these HR limits evidence that more precisely these training zones will be outlined taking into account the HR values obtained in real rest state. If the person was physically active in the past, intensity can be increased to approximately 70–85% $HR_{Reserve.}$ If the HR is too high, the intensity of the exercise should be reduced for the reason that the endurance training is the most efficient in this target zone (Morici et al., 2016; Sebastian, Reeder, & Williams, 2015).

Monitoring of heart rate (HR) during exercise is a valuable method for the feedback formation (Kiss et al., 2016; Mann, Lamberts, & Lambert, 2013) and many pulse monitors or feedback providing devices can be beneficial in this area (Argha, Su, Nguyen, & Celler, 2015). However in case of a patient deciding to participate in an exercising session without having measured his or hers real HR after of 8 hours of sleep, further calculations for choosing the intensity of exercising could be inaccurate. The results of calculations obtained by comparing values of HR at various recommended intensities of training, i.e. 50% of $HR_{Reserve}$, 70% of $HR_{Reserve}$, and 85% of $HR_{Reserve}$ revealed that while (if) taking into account the real or relative rest values the obtained HR values recommended for exercising significantly differ. This means that the algorithm for feedback formation installed into the monitoring system should take into account the initial values of HR corresponding to the state of absolute rest, i.e. after of 8 hours of sleep. But in case we do not have such measurements and decide to arrange a training session, a measurement of HR before exercising, i.e. at relative rest state, can be taken for this purpose; however the algorithm for feedback formation should also take this difference into account.

CONCLUSION

The HR at relative rest state is different to the real rest state HR and therefore the algorithm for feedback formation should take this difference into account, i.e. the corresponding correction of such HR values should be installed.

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FOREIGN LANGUAGE ANXIETY IN STUDENT LEARNING

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ABSTRACT

Background. Anxiety includes uncomfortable feelings when learning or using the new language. It continues to exist in the university foreign language classroom as well. A number of foreign language students report feeling anxious about language learning. Research aim was to investigate the foreign language anxiety (in our case, English as a foreign language, EFL) in the classroom context at tertiary level in relation to its effect on foreign language acquisition as well as to design recommendations of how to reduce or exclude foreign language anxiety from the university foreign language classroom.

Methods. The Foreign Language Classroom Anxiety Scale developed by E. K. Horwitz, M. B. Horwitz, and Cope (1986) was used. The questionnaire consisted of 5 statements about the respondents' general background and 33 statements which were evaluated on the Likert scale from 1 to 5 by the research participants. The research sample involved 200 first and second year students of Lithuanian Sports University.

Results. The research analysis revealed that the respondents generally felt anxious speaking in the language class, making mistakes and being corrected by the teacher, worrying about the consequences of failing foreign language class and speaking with native speakers. The correlation between the students' level of knowledge and their feeling of anxiety was established: students of lower level (A2 and B1) tended to feel higher levels of anxiety. Moreover, female participants of this study exhibited higher levels of foreign language anxiety.

Conclusions. Foreign language anxiety proved to be a powerful predictor for demotivation in foreign language learning and impeded the acquisition of foreign languages. The research analysis revealed that the majority of younger respondents demonstrated a higher degree of anxiety. The more mature the students were, the more confident they felt in EFL classes. It was found that female students felt higher level of anxiety in learning English as a foreign language than male students. They were more inclined to hesitate and felt anxious in the language classroom, while male undergraduates were more confident and had a greater ability to cope with the feelings of anxiety and nervousness. Students with higher knowledge of English language (level B2) showed lower levels of anxiety and felt more confident in language class. A large number of failures was observed at the pre-intermediate and lower intermediate (A2/B1) levels. Therefore, the learners with high anxiety often got low achievement and low achievement made them more anxious about learning.

Keywords: anxiety, foreign language acquisition, higher education.

INTRODUCTION

Anxiety is defined as a subjective feeling of tension, apprehension, nervousness, and worry usually associated with an arousal of autonomic nervous system. A feeling of nervousness associated with foreign language learning is termed as foreign language anxiety (FLA). Horwitz et al. (1986) were the first to conceptualize FLA as a unique type of anxiety specific to foreign language learning. E. K. Horwitz, M. B. Horwitz & Cope (1991) view FLA as a distinct complex of self-perceptions, beliefs, feelings, and behaviours related to classroom language learning arising from the uniqueness of the language learning process. MacIntyre and Gardner (1998) conceive of FLA as the worry and negative emotional reaction aroused when learning or using

a second language. There is a considerable amount of research indicating that foreign language anxiety (FLA) is a reality for many students and is not merely an abstract construct studied by theorists or by researchers under laboratory on induced-anxiety conditions. It continues to exist in the university foreign language classrooms. Second and foreign language researchers and linguists have long been trying to associate anxiety with language learning, in general, as well as in a classroom situation. They argue that specific classroom situations provoke anxiety during different stages of the language learning process. Thus, foreign language anxiety is a powerful predictor for demotivation in foreign language achievement which means that FLA has debilitating effects on learners' achievements/ scores. Other authors (Ghadirzadeh, Hashtroudi, & Shokri, 2012) also point out that in order to make an impact on motivation in EFL (English as a Foreign Language) learning it is important to recognize and remove anxiety which usually reinforces demotivation in foreign language learning and hence leads to undesired learning outcomes. Moreover, it was confirmed that the unwillingness to study a foreign language or even failure in meeting the requirements of the university program was determined by anxiety as the most demotivating factor in learning foreign language at the university level (Lileikienė & Danilevičienė, 2015). Thus, the research aim was to investigate the foreign language anxiety in the classroom context in relation to its effect on foreign language acquisition as well as to design recommendations of how

METHODS

The research was conducted in January–February of 2016. The Foreign Language Classroom Anxiety Scale (FLCAS) developed by Horwitz et al. (1986) was used. The FLCAS has been used in studies extensively over the past 30 years and has facilitated a tremendous development in the research into FL classroom anxiety. The questionnaire consisted of 5 statements about the respondents' general background and 33 statements which were evaluated on the Likert scale from 1 to 5 (the 5-point Likert Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Agree nor Disagree, 4 = Agree, 5 = Strongly Agree) by the research participants. The research sample involved 200 first and second year undergraduate students of Lithuanian Sports University (58.5% females and 41.5% males), studying in Physical Activity and Public Health, Sports Coaching, Physiotherapy, Adapted Physical Activity, Physical Education and Sport, Sports Industries, Sports Recreation and Tourism study programs.

The FLCAS was translated into Lithuanian by an official translator and edited by the researchers so as to carry the meaning of the original instrument. Subsequently the Lithuanian version was given to two experienced EFL teachers, who are native speakers of Lithuanian, to translate back into English to confirm that the meaning had not been altered.

The data was analyzed using the SPSS version 22 statistics package. Data is presented as frequencies or absolute values. Associations between categorical variables were determined using Chi square test.

The research sample comprised 3 age groups (18–20 years old (75.5%), 21–23 years old (22%) and 24 and more years old (2.5%) of whom 56.5% lived in the city, 30.5% – in town and 13% – in village.

RESULTS

The research results demonstrated that age was statistically significantly related with the students' attitude and anxiety level while studying foreign languages. In response to the statement 'I never feel quite sure of myself when speaking in my foreign language class' the group aged 18–20 years old reported the lack of confidence (80%) whereas 25% of 24 and more years old students did not feel anxious and were self-confident, when χ^2 =26.69, p = .001 (Figure 1).

Older students demonstrated higher levels of intrinsic motivation as well. Younger students were afraid of being laughed at or corrected by a teacher. 80% of the 18–20-year-old respondents thought about the things that were not related to the course while older respondents felt more involved in the course (χ^2 = 14.72, p = .006). The statistically significant finding was made that younger students worried about consequences of failing in the language class more (76.7%) while the 21–23-year-old students felt more relaxed about their course results (7%) and only 3.3% of 24-year-olds worried about failing consequences. (χ^2 = 17.29, p = .027).

The study revealed that students who were eager to learn a foreign language and would not worry about taking more language classes lived in the city (48.4%), in town (29%) and students living in a village demonstrated the lower level

of intrinsic motivation and a wish to develop themselves learning languages (χ^2 = 17.19, p = .028). The city residents were likely to feel more at ease during tests (75%) and felt more comfortable around native speakers (city – 53.8%, town – 23.1% and village – 23.1%; χ^2= 21.51, p = .006).

Female students panicked to speak in front of others and got nervous when asked questions without preparation. In addition, female students did not feel self-confident in the foreign language class when speaking (73.7%) as compared to their male counterparts (26.3%) (χ^2 = 16.65, p =.002). Thus, the majority of the questioned male students indicated the high level of confidence when they spoke in the foreign language class (75% of the male students strongly disagreed with the statement 'I never feel sure of myself while speaking in the foreign language classroom', when χ^2 = 16.65, p = .002) (Figure 2).

Although female students felt well prepared, they were anxious and embarrassed when asked to volunteer answers in class (81.5%). Whereas male students felt confident while they spoke in the foreign language class (only 18.2% of male students strongly agreed with the statement 'It embarrasses me to volunteer answers in my language class'). They did not think that other students spoke better (87.5%; χ^2 = 33.07) or that other students would laugh at them making mistakes (68.2%; χ^2 = 28.92), when p < .05.

Figure 1. **Participants' level of self-confidence while speaking in the foreign language class with respect to age**

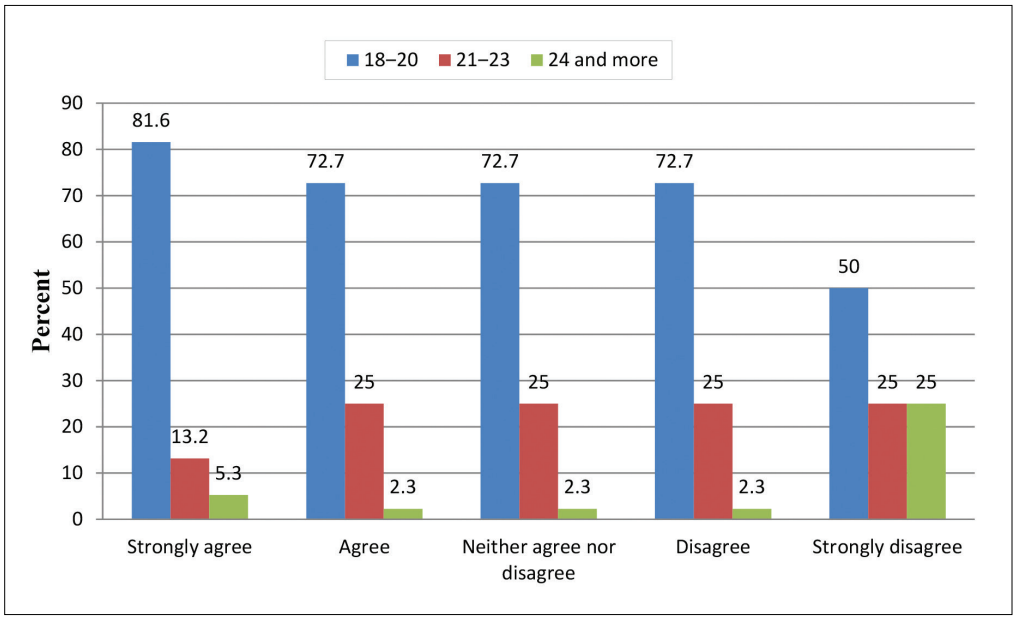
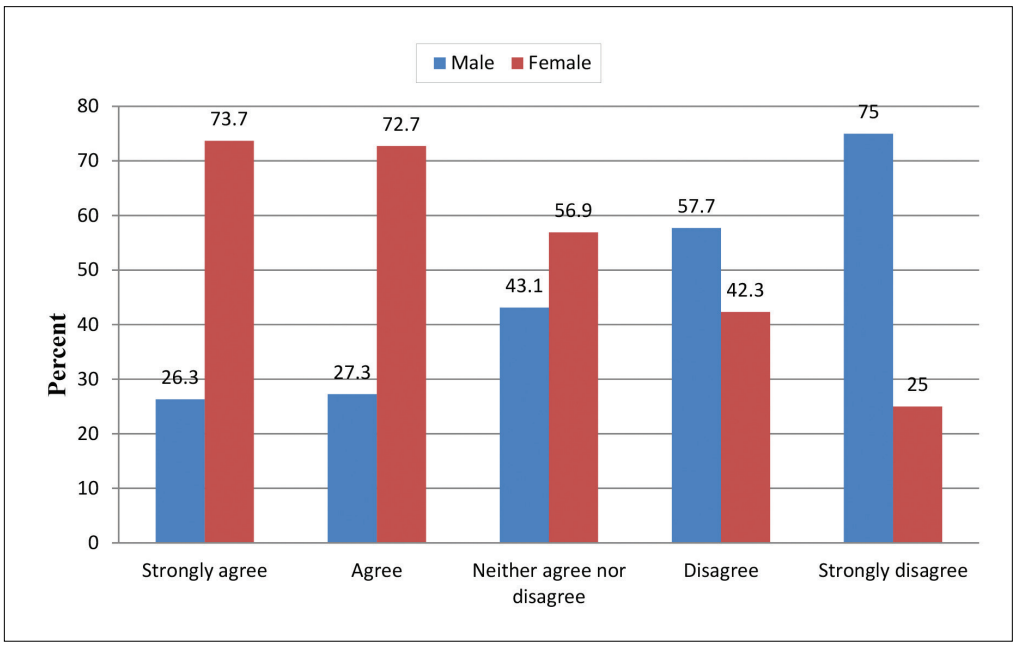


Figure 2. **Participants' level of self-confidence while speaking in the foreign language class with respect to gender**



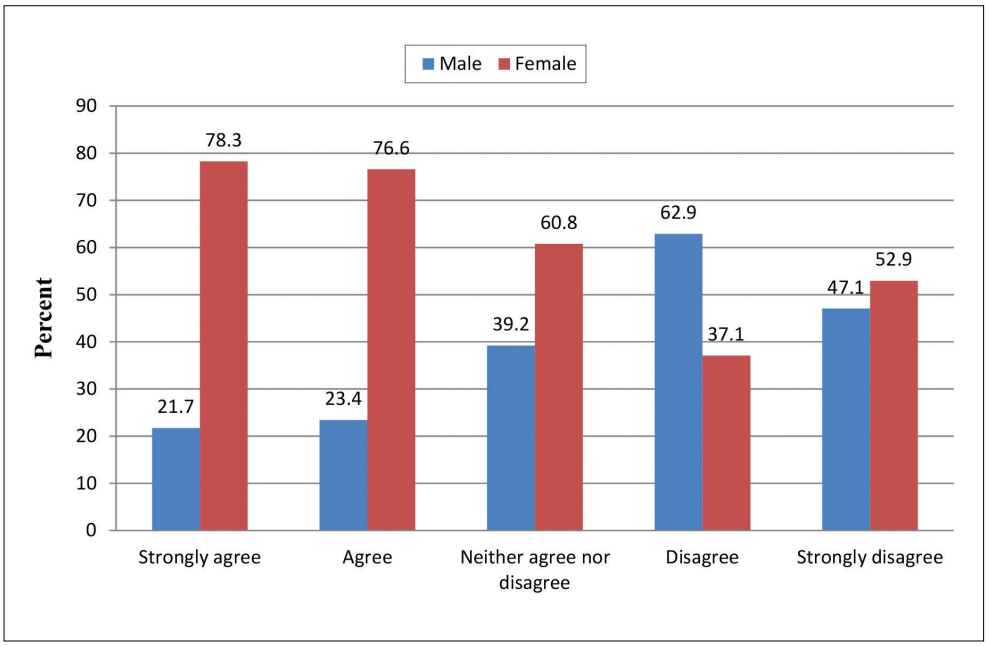


Figure 3. **Participants' level of anxiety in the foreign language class as compared to other classes with respect to gender**

The statistically significant findings in Figure 3 demonstrate that the majority of female respondents felt tense and anxious in the language class more than in other classes (78.3%) as compared to male students (21.7%, $\chi^2 = 22.06$, $p < .05$).

Finally, the investigated female students most frequently felt like not going to the foreign language class (77.3% of females and 22.7% of males, when $\chi^2 = 10.17$, $p = .038$). Consequently, female participants experienced even physiological reactions in the class (heart pounding ($\chi^2 = 36.25$, $p < .05$ and trembling ($\chi^2 = 12.28$, $p = .0015$) more than male students.

A statistically significant correlation was established between the students' English knowledge level and their confusion before a language test. Only 10% of the participants with A2 level got more confused the more they studied for a language test, whereas 50% of them with B1 level and 40% with B2 level got confused the more they studied for a language test ($\chi^2 = 44.23$, $p < .05$).

Students with B1 level (55.1%) felt most of all overwhelmed by the number of rules they had to learn, whereas 32.7% of students with B2 level and 10.2% with A2 level felt less anxious about it ($\chi^2 = 28.92$, $p = .024$).

More than a half of the participants with B1 (52.4%) got nervous when they did not understand every word the teacher said, while 23.8% of students with A2 and B2 level worried about that ($\chi^2 = 36.72$, $p = .002$).

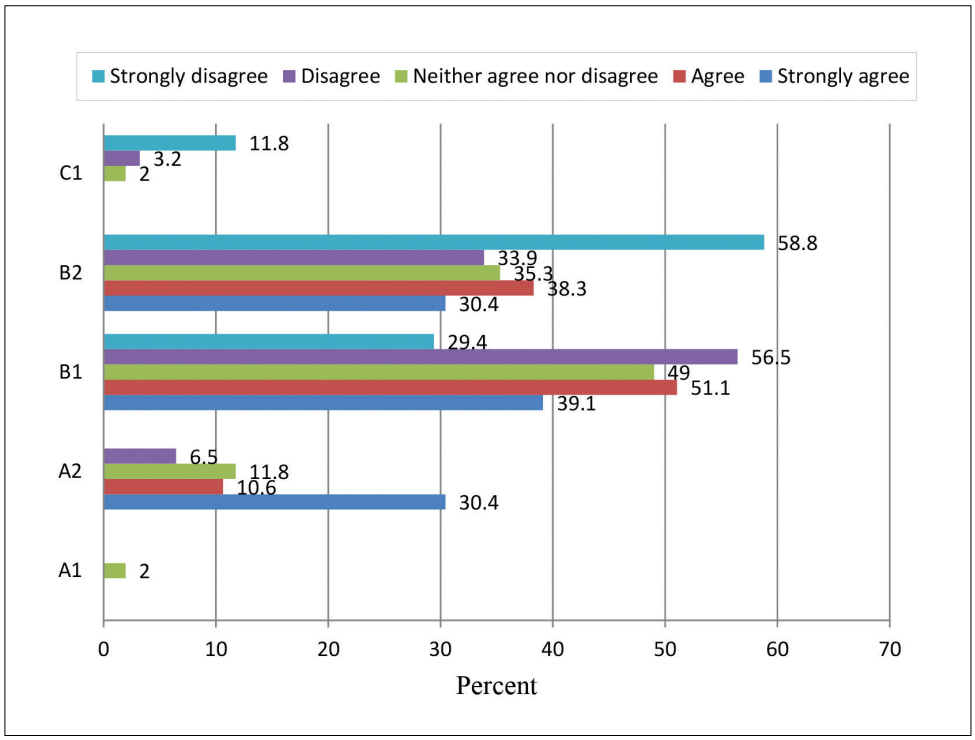
However, the research analysis revealed that irrespective of the level of English competence about one third of the students in level A2 (26%) and level B2 (28%) started to panic when they had to speak without preparation in language class, while students with B1 level panicked the most – 46% ($\chi^2 = 30.25$, $p = .017$).

Moreover, regardless of the level of the English language knowledge, about one third of students in all levels of language competence felt more tense and nervous in foreign language class than in any other classes: A2 – 30.4%; B1 – 39.1%; B2 – 30.4% ($\chi^2 = 26.88$, $p = .043$) (Figure 4).

The duration of studying English was taken as a variable in researching its relationship with students' anxiety and their achievements. In Lithuania students usually study English as the first foreign language for 10–12 years on average. An important finding of the research was that the longer students studied English the less they were afraid of making mistakes ($\chi^2 = 77.90$, $p = .012$), as well as another finding that the longer students studied English the more they felt comfortable around native speakers. As many as 37.9% of the research participants (12 years of studies) would feel comfortable around native speakers of the foreign language ($\chi^2 = 82.85$, $p = .004$).

Nevertheless, irrespective of the duration of their studies of English about one fifth of the students felt embarrassed to volunteer in English classes: 10 years of studies – 18.2%; 12 years of studies – 27.3% ($\chi^2 = 71.04$, $p = .041$).

Figure 4. **Participants' level of anxiety in the foreign language class as compared to other classes with respect to their foreign language level**



DISCUSSION

Horwitz et al. (1991) identified the possible causes of FLA as communication apprehension, test anxiety and fear of negative evaluation. Chen and Chang (2004) suggest that in addition to task difficulty, factors such as teachers' attitude and evaluation, teacher-students interactions in class, parents' expectations, classmates' attitudes, students' own achievements are the potential sources of students' foreign language anxiety. The research analysis revealed that the respondents generally felt anxious speaking in the language class, making mistakes and being corrected by the teacher, worrying about the consequences of failing in a foreign language class and speaking with native speakers, thinking that other students spoke better than they did, and being afraid of being laughed at, etc.

The research focused on the investigation of the foreign language anxiety in the classroom context in relation to its effect on foreign language acquisition with respect to age. It was proved that anxiety was also closely correlated with age (Bailey, Onwuegbuzie, & Daley, 2000) and motivation (Yan & Horwitz, 2008). Consequently, the research showed that the level of anxiety in class statistically significantly decreased as students got older, mature, built more self-esteem and developed as personalities.

Similarly to the earlier research performed by Öztürk and Gürbüz (2013) on gender and language anxiety, the analysis of the foreign language anxiety in the classroom context in relation to its effect on foreign language acquisition with respect to gender proved that female participants of the present study tended to exhibit significantly higher levels of foreign language anxiety as well. The previous research demonstrated that anxiety was also closely correlated with learning difficulties (Chen & Chang, 2004). The findings of this study showed that students with higher knowledge of English language (level B2) were less frightened and did not feel anxious when they did not understand their teacher. They also felt at ease during tests, felt more confident when speaking in English language class and worried less about getting left behind.

Despite the foreign language knowledge level, students still felt anxious in their foreign language classroom, which proved the conclusions made in many other research that anxiety in a foreign language class is not a rare phenomenon referring to the research by Suleimenova (2013) who, correspondingly, found that the majority of students still experienced uneasiness and anxiety while they spoke in the foreign language.

It can be concluded that, in agreement with Riasati's (2011) study, foreign language anxiety still persists in the language learning process and, consequently, negatively affects students' performance in the foreign language classroom.

CONCLUSIONS

Foreign language anxiety proved to be a powerful predictor for demotivation in foreign language learning and impeded acquisition of foreign languages. The research analysis revealed that the majority of younger respondents demonstrated a higher degree of foreign language anxiety. The more mature the students were, the more confident they felt in foreign language classes. It is also found that female students felt higher level of anxiety in learning English as a foreign language than male students. They were more inclined to hesitate and feel anxious in the language classroom. This result shows that male undergraduates were more confident and had a greater ability to learn a new language and cope with the feelings of anxiety and nervousness.

Students with higher knowledge of English language (level B2) showed lower level of anxiety and felt more confident in language class. A large number of failures were observed at the pre-intermediate (A2) level. Therefore, the learners with high anxiety often got low achievement and low achievement made them more anxious about learning.

Keeping in mind the findings of the study and for the purpose of improving students' performance in English, it is necessary for language teachers as well as learners to consider measures to facilitate anxiety levels. Establishing realistic and achievable goals, building a relaxing classroom environment, taking into consideration language learning experiences and feelings, providing assistance, approving and praising learners often, etc., have been recommended to be effective in reducing anxiety levels.. Therefore, these measures might help to boost self-esteem and promote intrinsic motivation of students paying more attention to the building and enhancing their personalities' development to achieve better results in the foreign language classroom and, thus, in the overall goal of studies in the student learning process.

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THE ROLE OF PHYSICAL ACTIVITY IN PSYCHOLOGICAL RESILIENCE

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ABSTRACT

Background. Existing research indicates that both teachers and prospective teachers who are physically active in comparison with inactive generally easier cope with physical and psychosocial problems. This topic, particularly psychosocial development of individuals and their participation in sports, has attracted the attention of researchers in recent years. There are a lot of studies on this issue, but less is known about the relationship between physical activity participation and psychological resilience. Therefore, the purpose of this study was to determine the association between experience of physical activity and psychological resilience of prospective teachers according to some variables.

Methods. A sample of 331 last year student teachers (134 females and 197 males) who study at the Faculty of Education at Karadeniz Technical University in Northeast Turkey was evaluated. We used Childhood and Adolescence Physical Activity Levels Questionnaire to determine the physical activity experience. Besides, we applied the Brief Resilience scale to analyse the psychological resilience. The data was analysed by using the Pearson's Correlation Coefficient, Simple Linear Regression and Independent Sample *t*-Test.

Results. The research findings show that there was positive and significant relationship between psychological resilience and physical activity experience of prospective teachers. Regression analysis revealed that participation of physical activity was found to be significant predictors of resilience. In addition, both physical activity levels and resilience of prospective teachers with respect to gender, department and licensed sports participation status were found significant.

Conclusions. Physical activity has numerous beneficial psychological effects. Furthermore, current research results suggest that experiences of physical activity play a role in psychological resilience of prospective teachers. It was also concluded that prospective teachers should be encouraged to participate in physical activity. The development of this aspect of the policy can contribute to psychological resilience of prospective teachers.

Keywords: sport, psychological resilience, teacher education.

INTRODUCTION

Participation in physical education and sports activities at school during childhood and youth is an important opportunity for the acquisition of healthy lifestyle and physical activity habits and for the transfer of such habits to the later stages of our lives. Physical activity is known to have a role in the maintenance of a healthy weight and the enhancement of fitness, endurance, strength and flexibility as well as reducing the risk of chronic diseases that are considered as today's diseases (Central for Disease Control and Prevention, 2008; The Ministry of Health Public Health Agency of Turkey, 2014). Regular physical activity not only provides protection and prevention against such diseases but also reduces the risk of obesity and contributes to the cognitive and psychological robustness (Guiney, Lucas, Cotter, & Machado, 2015; Walker, Sechrist, & Pender, 1987). Bandura (1993) notes that being physically active has a positive effect on overcoming psychological and social problems and contributes particularly to the self-efficacy of teachers constituting the sample group of this research.

Research addressing problems experienced in teacher training has in recent years grown in importance across the world (C. Alemdağ & Öncü, 2015; S. Alemdağ & Öncü, 2015; Caz & Tunçkol, 2013; Hamilton, 2016; Hein, Koka, & Hagger, 2015; Maciulevičienė & Gedvilienė, 2014; Reeves & Lowenhaupt, 2016; Yazıcı & Altun, 2013). Especially the first years of service have significant effects on the professional development of teachers (Paquette & Rieg, 2016; Sharplin, O'Neill, & Chapman, 2011). In developed and developing countries, teachers often complain of such problems as job withdrawal, burnout and lack of self-confidence and self-esteem within the first five years of their career; and rates of teacher turnover are also quite high in these years (Allensworth, Ponisciac, & Mazzeo, 2009; Graham, Parmer, Chambers, & Tourkin, 2011). Efforts made to overcome problems encountered in this period increase the importance of the concept of psychological resilience (Cornu, 2009). Psychological resilience is defined as the capacity to cope with and tolerate challenging or troublesome circumstances and to adapt or recover despite adverse conditions (Masten, Best, & Garmezy, 1990; Ramirez, 2007; Reich, Zautra, & Hall, 2010;). It is a well-known fact that undesirable situations encountered in teaching profession where psychological pressure is felt more than in other occupations (Çelebi & Oğuzöncül, 2013) should be handled because teachers are expected to not only fulfil their responsibilities for teaching and training activities but also to support students' academic and social development. Psychological resilience, which is also defined as the ability to bounce back from problems faced in the school environment with a dynamic structure and to successfully adapt to a new situation (Doğan, 2015), is believed to be a key ability for teachers and preservice teachers. The positive effects of participation in sports and physical activity on coping with challenging or threatening conditions have been revealed by a considerable number of studies (Penedo & Dahn, 2005; Salmon, 2001; Southwick, Vythilingam, & Charney, 2005; Wankel & Berger, 1990; Warburton, Nicol, & Bredin, 2006). There is a lot of research on this issue, but less is known about the relationship between physical activity participation and psychological resilience. The current study will also be contribute to the literature in Turkey to eliminate the lack of research on relationship between physical activity and psychological resilience of teachers.

Therefore, the aim of this study was to determine the association between experience of physical activity and psychological resilience of prospective teachers according to some variables and establish whether physical activity has a predicting effect on psychological resilience of preservice teachers.

METHODS

This study is based on descriptive survey design and examines preservice physical education teachers' participation in physical activity and psychological resilience. A sample of 331 senior preservice teachers (134 females and 197 males) studying at the Faculty of Education at Karadeniz Technical University in Northeast Turkey was evaluated. All of the preservice teachers of physical education, English, mathematics and Turkish language teaching completed a teaching internship for at least one semester at primary schools. After the required permits were obtained, data was collected by means of related scales at the end of the internship in February 2015.

We used Childhood and Adolescence Physical Activity Levels Questionnaire to determine the physical activity experience. Childhood and Adolescence Physical Activity Levels Questionnaire developed by Masiie (2002) is a scale used to measure participation levels in physical activities at four educational stages (primary school, secondary school, high school and university) (Saygın & Ayhan, 2015). Total scores were calculated based on the physical activity participation levels of preservice teachers at primary school, secondary school, high school and university For each developmental level, participants were asked about their level of participation in physical activity in four different venues (physical education classes, organized_youth sports, sport specific lessons, and informal physical activities). For these eight items, a five-point Likert-type scale measured frequency, where 1 = "never or almost never" (0–20%), 2 = "rarely" (2l–40%), 3 = "sometimes" (4l–60%), 4 = "often" (6l–80%), 5 = "almost always or always" (81–100%), and na = "not applicable" (Massie, 2002). This measurement instrument was preferred as it addresses both individuals' past physical activity experiences and current participation in physical activity. Participation in physical activity was considered as a process. Childhood and adolescence physical activity levels questionnaire allows us to determine individuals'

past and current physical activity levels. Scores obtain from the questionnaire consists of the sum of current level, adolescence level and childhood level of physical activity scores. This scale not only provides us the current sitiation but also overall process of individuals physical activity levels.

Besides, we applied the Brief Resilience scale to analyse psychological resilience. The short form of this scale developed by Smith at al. (2008) focuses on individuals' characteristics of bouncing back, recovering from stress, functioning again and readapting, which is different from the scales described, and adapted in Turkish by Doğan (2015). The scale consist of six items. While 1, 3, and 5 are positevly; 2, 4, 6 are negatively worded. A five-point Likert-type scale measured the following: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.".

RESULTS

The research findings show that there was positive and significant relationship between psychological resilience and physical activity experience of prospective teachers. Regression analysis revealed that participation in physical activity was found to be significant predictors of resilience.

The correlation coefficient, *r*, was found to be $r = .598$. Physical activity level was adequate and significantly positively correlated with psychological resilience. ($r = .59$, $p < .001$). The implication of this *r* value leads to the deduction that 59.8% of the dependent variable is explained by the independent variable. In other words, 59.8% of the psychological resilience that was displayed by the subjects, in this case preservice teachers, was explained by the participation in the physical activities. This research process is consequently 99% certain that physical activity promotes psychological resilience. The relationship between physical activity and psychological resilience is shown in Table 1 and Figure.

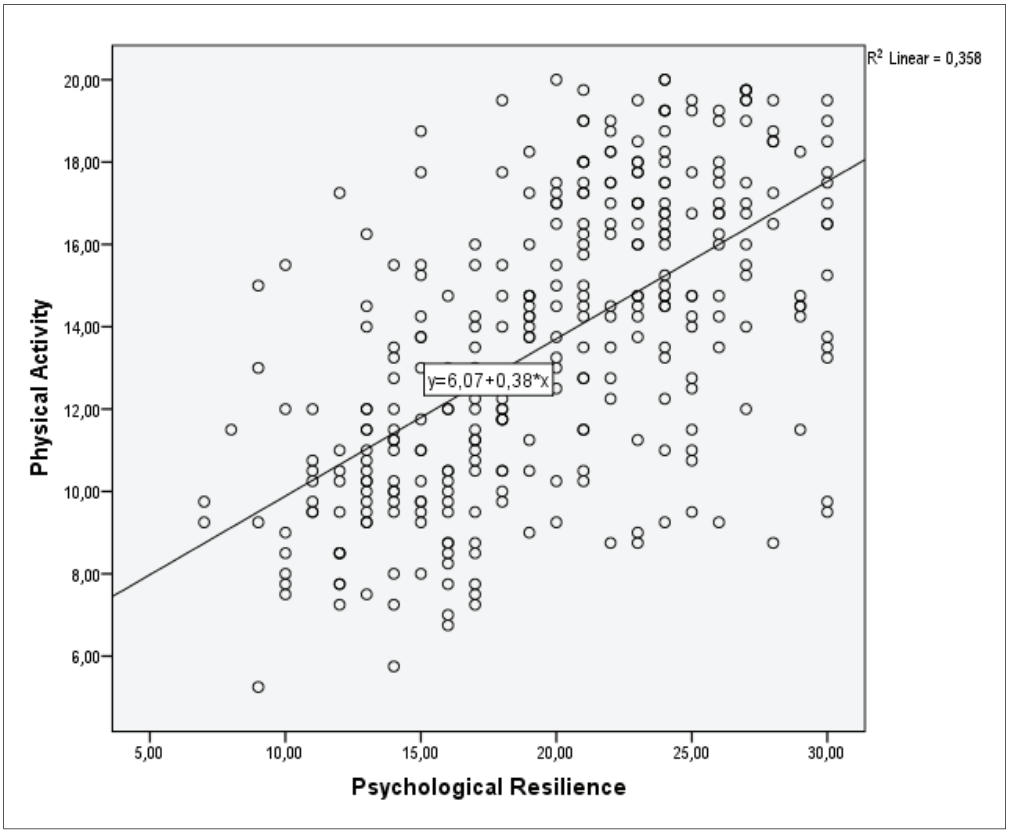
Table 1. **The correlation results of physical activity and psychological resilience**

	Resilience		
	n	**r**	**p**
Physical Activity	331	.59**	.00

Note. ** $p < .001$.

Simple lineer regression was used in order to estimate predictive relations between participation of physical activity and psychological resilience. A significant regression equation was found ($F(1,329) = 183.095$, $p < .000$) with an R^2 of .358. There is a direct relationship between the two variables under analysis and it is also a positive

Figure. **The relationship between physical activity and psychological resilience**



	B	St. Error $_B$	β	t	p
Constant	7,000	.972	-	7.201	.000
Physical Activity	.936	.069	.598	13.531	.016
R = .598		R^2 = .358			
$F_{(1, 329)}$ = 183.095		p = .000			

Table 2. **Regression analysis results on physical activity and psychological resilience**

relationship between physical activity and psychological resilience. In other words, the more the individual participates in activities of physical exercise, the greater the psychological resilience that he or she displays. The vice versa is also true; the less the physical activity, the less the level of psychological resilience. Regression analysis results on physical activity and psychological resilience are given in Table 2.

DISCUSSION

Psychological resilience is the differences between people in how they respond to and cope with difficult or stressful experience. Teaching profession is one of the careers full of adversities. This is due to the frequent interaction with children who typically do not care about anything. Consequently, this leads to stress and a lot of anger among teachers. This report confirms that there is one of the most natural ways of dealing with adversities, that being through engagement in physical activity. Scientifically, as suggested by Spalding et al. (2004), the fact proved by the above research may be due to the fact that physical activity leads to improvements in general cardiac performance – the cardiovascular system becomes more efficient and does not need to do as much work to mobilize resources in reaction to a stressor. As evident from the above results, there is a great correlation between physical activity and psychological resilience. When the body gets to be active, mostly in prospective teachers, they tend to be more resilient to adversities in their work. They can stand disappointments, stress and demoralizing situations. Teachers, evidently those who take basic courses such as entertainment and sports, tend to be more resilient due to the fact that they end up practicing as a way of encouraging students in sports activities. This is due to the fact that a sport is a typical physical activity. Teachers who were non-exercisers exhibited a greater decline in positive effect during the test as compared to exercisers. These findings provide the best support for claims that regular exercise protects against the negative emotional consequences of stress.

The implication of this particular study is that it can be used for the purposes of policy implementation. Resilience is one positive trait that is much needed by most individuals particularly with the understanding that it is indeed very effective in terms of stress adaptability. With the direct and positive relationship between resilience and physical activity that has been established in the preceding section of this analysis, physical activity should be encouraged amongst teachers, through various policies in order to promote resilience. Further, this particular research process also highlighted the fact that 59.8%, approximately equal to about two thirds, of the psychological resilience that was showcased by the subjects was explained by their participation in physical activities. However, 40.2% was explained by other factors not within the model. In order to develop comprehensive empirical and theoretical research, future studies should consider substantiating these other factors, other than physical activity, that promote psychological resilience.

CONCLUSION

Physical activity has numerous beneficial psychological effects. Furthermore, with current research results suggest that experiences of physical activity play a role in psychological resilience of prospective teachers. It was also concluded that prospective teachers should be encouraged to participate in physical activity. The development of this aspect of the policy can contribute to psychological resilience of prospective teachers. Therefore, prospective teachers should be encouraged to engage in physical activities to improve their psychological resilience. In current study the physical activity levels used self-reported questionnaire and all participants came from a single school site. For

future research, a wider diversity of prospective teachers from multiple schools may be included to expand the generalizability of these findings. Also instead of self-reported questionnaires, pedometers or accelerometers can be used to measure physical activity levels. In summary, while acknowledging the limited transferabillty of current study to generalizations for teachers, this study emphasizes that physical activity has a significant impact on psychological resilience of prospective teachers.

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EXPLORING TENNIS COACHES' INSIGHTS IN RELATION TO THEIR TEACHING STYLES

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ABSTRACT

Background. The aim of this study was to explore junior tennis coaches' insights in relation to teaching styles they employ as well as the motivations and reasons that underpin these practices.

Methods. The research consisted of implementing interviews with the 13 tennis coaches. It employed purposive or theoretical sampling. Semi-structured interviews commenced with a prearranged group of questions to permit scope in direction so that the interviewer may follow what is considered as pertinent to the interviewee. The coaches were filmed during three 30 minute sessions. Prior to the interviews, each of the coaches was requested to view a portion of their video-recorded sessions. The interview data were analysed via deductive content analysis.

Results. The results highlighted a lack of knowledge concerning the theoretical and practical application of various teaching styles required for coaching tennis to junior players. The coaches lacked self-awareness with regard to their own coaching performance and were incapable of accurately describing the reasons why they implement particular *ways* of coaching. Coaches used an assortment of terms to identify the *way* they coach and that their decision to employ certain *ways* of coaching did not alter as a function of the age group, skill level or ability of the players they were coaching. Observing and/or discussing aspects of coaching with a mentor as well as playing experience had a greater influence on current coaching behaviour than attending an accreditation course.

Conclusion. The finding from this study is that the personally anticipated coaching behaviour of the coach was not what they realised upon observation of their coaching.

Keywords: tennis, coaching, teaching, styles, game based.

INTRODUCTION

The aim of this study was to explore the coaches' insights in relation to teaching styles they employ as well as the motivations and reasons that underpin these practices. This research responds to the requests of some that in order to comprehend the nature of coaching, research initiatives should be directed at the domain of individual coaches, and how they function within their given contexts (Potrac, Jones, & Armour, 2002). Correspondingly, research that attends to the individual interpretations of coaches' experiences, understanding and knowledge and the processes that guide their actions during practice is recommended and necessary (Harvey, Cushion & Massa-Gonzalez 2010; Potrac et al., 2002; Smith & Cushion, 2006).

Coaches are fundamental to the provision of sporting experiences. Each year, numerous coaching practitioners from around the world offer players of all ages and abilities assistance and direction that serve to fulfil their sporting requirements and goals. There has been a significant expansion in coaching research (Gilbert & Trudel, 2004) that has positioned the discipline of coaching as a valid academic field of study (Lyle, 2002). Notwithstanding lengthy investigations from numerous empirical and theoretical viewpoints (Gilbert & Trudel, 2004), much remains unknown

about coaching and instructional practices, positive or negative, across a range of settings and sports (Lyle, 2002; Potrac, Jones & Cushion, 2007). Therefore, research that considers "what coaches do and why they do it, still offers much in developing our understanding about coaching" (Cushion, 2010, p. 44).

Much has been written about the various instructional practices and behaviours available for coaches to employ during coaching sessions (Lyle & Cushion, 2010). Traditionally, the educational association between coach and player has been "largely autocratic and prescriptive in nature" (Jones, 2006, p. 43). Under these instructional conditions, the coach has been considered as the "sole source of knowledge and has been responsible for the unidirectional transmission of this information to athletes who have adopted a largely passive role in the teaching and learning process" (Jones, 2006, p. 43). The term most commonly linked to this instructional practice is direct instruction. Direct instruction implies a "highly structured, teacher-centered and controlled instructional environment" (Byra, 2006, p. 452). An alternative instructional practice that invites greater player decision making in relation to the *how*, *why* and *what* of learning is indirect instruction. This type of instruction regards the coach as a facilitator. Within this pedagogical paradigm, the coach provides minimal to no instruction or feedback and is engaged in facilitating or guiding players to explore options and solve problems. This is achieved through techniques such as posing questions, summarising, reflecting and listening (Breed & Spittle, 2011). Other terms such as: student-centred, implicit, inquiry and guided-discovery have been used to describe common but not identical pedagogical principles related to this instructional practice.

There exist few published accounts that have reported on *how*, *why* or indeed *whether* sports coaches consider pedagogical principles during coaching sessions. Mallett (2005) contends that historically there has not been "much research that has examined what approaches teachers/coaches adopt and why" (p. 1). To the researchers' knowledge, and following a wide review, there is no published research with regard to teaching styles and tennis coaches' pedagogical practice in Australia, and perhaps internationally. Anecdotal claims in the literature have suggested that tennis practitioners prefer to highlight the development of technical skills associated with tennis prior to introducing the tactical elements of the game (Reid, Crespo, Lay & Berry, 2007). These authors have additionally submitted that tennis coaches favour direct instruction whereby the coach dominates the decisions regarding the *how*, *why* and *what* of student learning. Within the context of this research investigating Australian tennis coaches, the influence of Game Sense approach (Australian Sports Commission, 1996) as the foundation of the Australian sport 'Playing for Life Philosophy' (Australian Sports Commission, 2015) has prompted tennis coach education providers in Australia to promote and emphasise game-based coaching that embraces increased player involvement in the learning process in their formal accreditation coaching course learner guides (Crespo & Reid, 2009; Tennis Australia, 2010a, 2010b).

METHODS

The research consisted of implementing interviews with the 13 tennis coaches. It employed purposive or theoretical sampling. This form of sampling means that "researchers intentionally select (or recruit) participants who have experienced the central phenomenon or the key concept being explored in the study" (Creswell & Plano Clark, 2011, p. 173). The purposeful strategy employed in this part of the study was maximal variation sampling (Creswell & Plano Clark, 2011). This strategy stipulates how "diverse individuals are chosen who are expected to hold different perspectives on the central phenomenon" (Creswell & Plano Clark, 2011, p. 174). The fundamental notion of this particular strategy is that if "participants purposefully chosen to be different in the first place, then their views will reflect the difference and provide a good study in which the intent is to provide a complex picture of the phenomenon" (Creswell & Plano Clark, 2011, p. 174). The criteria for maximising difference among the tennis coaches selected for this component of the study included the following:

- Gender;
- Age;
- State or territory in Australia where they coach;
- Coaching experience (years of coaching);
- Age groups most time spent coaching;
- Levels most time spent coaching.

According to Berg and Latin (2004) it is appropriate for researchers to "use their special knowledge or expertise about some groups to

select subjects who represent the population" (p. 32). Brandl-Bredenbeck and Kampfe (2012) suggest there are no general rules for drawing a sample size. According to Keeves and Sowden (1997) in the interest of seeking detailed reporting of interpretive data, fewer respondents are better. Therefore, 13 participants were considered an appropriate number for this part of the study. However, we acknowledge that while observing and interviewing a larger number of coaches may have provided the study with more depth and breadth, but the proposed sample size is consistent with Keeves and Sowden's (1997) recommendation and was considered appropriate by the authors to achieve the aims within the given time frame. The study received university ethics approval before the research commenced.

Semi-structured interviews commenced with a prearranged group of questions to permit scope in direction so that the interviewer may follow what is considered as pertinent to the interviewee (Freebody, 2003). This flexibility was essential because any major restrictions placed upon the participants can narrow the scope of the interview and interfere with the eliciting process (Reitman-Olson & Biolsi, 1991).

The coaches were filmed during three 30 minute sessions with a with a Sony IC MP3 recorder. Prior to the interviews, each of the coaches was requested to view a portion of their video-recorded sessions. The coaches viewed the same number of observations for consistency. These video-recorded sessions were transferred on to a disc and provided to the coaches by the lead researcher (Author 1) prior to the interview. Although originally planned to take 30-60 minutes, the interviews (which were scheduled to suit the participants' work and leisure commitments) lasted between 80 and 100 minutes in length.

At the commencement of the interview, the researcher asked the respondents to comment on their coaching sessions about the *way* they coached. When posing questions about the coaching habits of the participants, the lead researcher used the term *way* during the interviews rather than more specific terms (e.g., methods, approaches, styles). The reasoning behind this choice of language was that it was felt that by referring to specific terms it may have influenced the participants' responses when identifying and interpreting their coaching practices, in so far that the coach may use the term inadvertently as a cue or concept the participant needed to incorporate into their response A semi-structured interview protocol was used whereby six questions were used as prompts to begin discussion and the interviewer (author 1) then followed by with ancillary questions to explore lines of inquiry or to clarify discussion as it occurred. The questions were

- Could you identify or tell me what has or have been the major influences on the way you currently coach?
- After watching your three observed coaching sessions what are your thoughts with regard to the way you coached?
- Are there any additional ways of coaching tennis?
- Can you interpret and define the *ways* you coached during your three observed coaching lessons?
- Can you interpret and define any additional ways of coaching tennis?

Using the Nvivo 8.0 software, the interview data were analysed via deductive content analysis (Patton, 2002). Each interview was transcribed verbatim into Microsoft word rich text format by author 1. As soon as the coach's interview transcript was completed, it was re-read by author 1. This process helped the researcher to: (a) become highly familiar with each coach's interview and (b) facilitate the content analysis (Cote, Salmela, Trudel, Baria, & Russell, 1995). The interview transcripts were analysed by author 1 based upon the procedures and techniques of grounded theory. Grounded theory is an inductive methodology for developing theory grounded in data systematically collected and analysed (Saury & Durand, 1998). It consists of two main operations: (a) breaking down the data into meaningful units, and (b) grouping units with similar meanings into broader categories. The objective of this analysis was to organise and interpret the unstructured qualitative data obtained from the interviews with the coaches. The first step was a detailed line-by-line examination of the interview transcripts and involved highlighting sections of text into meaningful and significant excerpts. Tesch (1990) defined these "meaning units as a segment of text … comprehensible by itself and contains one idea, episode or piece of information" (p. 116). Second, similar features between meaning units were identified. This procedure of "creating categories" (Cote et al., 1995, p. 35) involved comparing meaning units and grouping them together to organise common

meaning units into distinct sub-categories. A sub-category was named according to the common features that all its meaning units shared (Cote et al., 1995).

As suggested by Patton (2002) exemplar quotations were used as a representational form to present the findings. Specifically, these quotations from the coaches were presented to help illustrate the categories. To increase the validity of the analysis, the coding process was discussed at different moments with a peer familiar with, and knowledgeable about, research in coaching behaviours. To ensure the soundness of the data collection and analysis, *member checking* was employed (Patton, 2002) which involves referring back to respondents in an attempt to confirm that the research has accurately represented their ideas and responses. *Member checking* occurred twice in this study. First, the interview transcription packages were provided to the participants and they were invited to clarify, elaborate, or suggest changes to the original responses. All the participants agreed that the transcriptions were accurate and besides correcting some spelling mistakes, none of the participants had any queries about or requested adjustments to the transcripts. The second *member checking* occurred after the analysis of the data was completed. Once again, all the participants were invited to respond to the interpretations and to correct inaccurate information. On this occasion, the participants did not suggest any amendments.

In the following section, a description of the coaches' teaching styles during their coaching sessions is given. The insights the coaches held about these teaching styles during coaching sessions are reported. In terms of structure, the following section will provide a description of the coaches' prevailing beliefs from the six interview questions posed to all coaches during the interviews. After this, a summary of the findings will be presented to provide a response to the research question: "What are the coaches' insights of the teaching styles they employ during coaching sessions?"

RESULTS

Interview question 1: "Could you identify or tell me what has or have been the major influences on the way you currently coach?"

This question was specifically designed to provide background information with regard to *how* and *where* the coaches learned the particular *ways* they coach. Of the participants, 11 coaches indicated that their experiences as a tennis student and the *way* they were coached significantly influenced the *way* they coach now. As Tegan explained:

> My coach had a big influence on the way I coach now. I still learn from him now and just kind of automatically do what he does, the same activities and how to explain things. I can still remember how he coached me as a beginner, like the exact activities. I just try and use these activities because they were fun for me (Tegan).

Patrick outlined a similar experience: My coach had a huge influence. I learned for so long that I found that I just used the same methods and tennis games to coach my kids now. I enjoyed the way she coached me so I use these similar methods (Patrick). Bill and Chris, however, expressed a different point of view in regards to the *way* they were taught. Bill and Chris both claim that their experiences as tennis students had little influence on how they currently coach. Bill commented:

> My coach was old school in terms of his coaching methods. I look around today and coaching is different. Less standing in lines, this is how I was taught. You didn't often play the game, just hit, run around and pick up balls and stand back in line. Maybe you played a tournament at the end of the term. I try and coach differently, play more games, more hits for the kids (Bill).

All coaches acknowledged the significant influence of a mentor on the *way* they currently coach. Each of the participants who were interviewed identified the Head Coach at the tennis club that they work as this mentor. Stephanie indicated that her mentor was the "primary influence on how I currently coach in my lessons" (Stephanie). Similarly, David attributed his coaching behaviour to the Head Coach (also his employer) at the tennis club where he coaches. David remarked: "the Head Coach at my club has definitely given me a lot of guidance. He writes the programs for us to use. These activities are good and fun for the kids" (David). No coaches in this study mentioned the impact or influence of formal accreditation coaching courses on their coaching.

Interview question 2: "After watching your three observed coaching sessions what are your thoughts with regard to the way you coached?"

Prior to conducting the interviews, each coach was requested to view three of their video-recorded

coaching sessions. At the commencement of the interview, the researcher asked the respondents to comment on these coaching sessions with regard to the *way* they coached. All the coaches expressed a high degree of surprise and sometimes disbelief as to what transpired during these sessions. Each coach indicated and acknowledged an apparent lack of compatibility with regard to what they believed happened during the sessions and what actually ensued concerning the *way* they coached. All the coaches strongly believed that they had coached in a particular *way* that emphasised the following areas:

- Asking the players to respond to questions about technical and tactical skills and challenges.
- Permitting the players to primarily engage in game-play and rallying.
- Allowing the students to solve technical and tactical skills and challenges independent of the coach and not directly and prescriptively informing the players what to do or how to do it.
- Limited ball *feeding*.

The video-recorded observations indicated that all coaches frequently employed *ways* of coaching that involved:

- Specifically and solely developing the technical skills of the players.
- Providing prescriptive information directly to the players to develop these skills.
- High frequency of ball *feeding* by the coach to enable players to develop their technical skills.

When asked to comment on what occurred during the three observations with regard to the *way* she coached, Tegan's response was common to all the interviewees:

> Well, I thought my coaching methods had more questions, yeah, the video really shows you different things, doesn't it? I like to ask lots of questions in all my lessons. I really thought that I asked a lot of questions and I tried to get the students to figure things out for themselves … I tried to ask questions and get them to discover for themselves … it was a bit of a disaster really. When I looked at the video, I did heaps of talking. The second lesson was the same, I thought that I questioned, but I was telling them what to do. I even started feeding balls, which wasn't even on my lesson plan (Tegan)!

Similarly, Stephanie stated:

> It was a bit embarrassing (laughing), I wasn't doing half the stuff that I thought I was, it was like I was a different coach. I thought my lessons were all really Game-Based, but looking at the videos I did all this feeding of balls, I thought I used questions and the guided discovery method, but having watched the DVD I actually didn't ask that many questions. I didn't realise that I did as much telling either. It was both difficult and interesting to watch (Stephanie).

David also provided similar sentiments when he asserted: "I was basically very command style, after watching the videos, feeding balls and telling them what to do, I asked a few questions but much less that I thought and certainly less than I planned on my lesson plan" (David).

All the coaches remarked on the beneficial outcomes associated with viewing their coaching sessions. The coaches expressed strong agreement that the video-recorded footage provided a useful platform to review their performance and assist in developing their understanding of the coaching process. For instance, Chris commented:

> I've never watched myself before, so it was really good to see what I do and how I coach, I thought that I might have used a more Game-Based Approach, but I did a lot of talking, I didn't shut up actually!, one of the comments from my learning facilitator was that I spent too much time explaining things and the kids didn't get to hit enough balls, at the time I didn't really agree with her, but after watching the lesson, I can see that I spent way too much time talking (Chris).

Jimmy also found the experience beneficial and mentioned: "Well, it was good to see what I was actually doing and how the kids were responding to the activities, I also picked up quite a bit from what I was doing and how I could possibly do things better." (Jimmy). David suggested that the video-recording of sessions should feature more prominently in the accreditation courses at Tennis Australia (TA):

> Yeah, I managed to take a look at the videos on Wednesday night, it was quite good, good to look at yourself, coach, and see what is happening, actually happening on the court. It would be good to have a copy of the DVD when you speak with the learning facilitator, instead of them just telling you about the lesson and

talking you through what happened, the video lets you see it for yourself (David).

Interview question 3: "Are there any additional ways of coaching tennis?"

The interviews revealed an assortment of terms that coaches used to describe the *way* they coached during their video-recorded coaching sessions. These terms are listed in Table 1. All the respondents in this study reported to using a Game-Based Approach (GBA) or game-based method during their three observed coaching sessions. Most of the coaches (n = 10) also nominated a discovery style, discovery method, modern way/method, and discovery approach as a *way* they coached in each of their sessions. Four of the respondents also claimed to have employed a constraints-based approach during the sessions.

Table 1. **Outline of all the terms that the interviewed coaches (n = 13) described as the ways that they coached during their three observed coaching session**

Ways of coaching tennis described by coaches	Number of coaches who described and coached this way
Game-Based Approach (GBA)	13
Game-based method	13
Discovery style	10
Discovery method	10
Discovery approach	10
Modern way/method	10
Games-centred strategy	9
Games strategy	9
Games approach	9
Constraints-based approach	4

All the coaches remarked on the beneficial outcomes associated with viewing their coaching sessions. The coaches expressed strong agreement that the video-recorded footage provided a useful platform to review their performance and assist in developing their understanding of the coaching process. The insights of the coaches in this study suggest that for these coaches assertion that GBA's can stimulate player motivation and by extension player enjoyment and fun resonates. GBA's were seen to strongly encourage the employment of questions to stimulate players' learning. Common responses among all the coaches with regard to employing GCAs consisted of: "It's more fun" (Tegan), "It's heaps of fun" (Bill), and "It's the most fun approach" (Travis).

The coaches describing a range of terms that were often used synonymously, their definition and interpretations were remarkably similar. For example, common definitions and interpretations among the interviewed coaches of a Game-Based Approach (GBA) consisted of:

I mainly used a Game-Based Approach (GBA). In all the lessons I tried to get the students to figure out the answers for themselves … I asked questions and got them to discover for themselves (Jimmy).

The coach should not tell the kids what to do, but ask lots of questions and just let them figure it out and make all or most of the decisions, explore the solutions and create the answers to the activities or technical problems they are having. This is a Game-Based Approach (GBA) essentially (Tim).

The coaches also commented that encouraging players to become involved in the decision making process during coaching sessions was the most effective avenue for developing tennis players. This aspect can be seen in the following comment:

The Game-Based Approach (GBA) produces better learners, better players. They work it out for themselves and remember better. Telling kids what to do doesn't really work, won't help them on the weekend when they are playing, they get to rely on the coach too much when it's technique and or traditional. When kids work it out themselves and on their own they learn more and remember better (Tegan).

This quote also suggests that the coach provided an accurate overview and representation of employing GBA's. The following comments provided by two of the coaches capture a common thought among all the coaches:

I pretty much instruct the same way with everyone, or at least I try and do it this way … it's my style to let kids and adults for that matter discover the skills of what to do on their own (Patrick).

I don't think coaches should have to change their style. The Game-Based Approach is just a better way to coach, so it can be done with all players. It doesn't really matter what the age of the player is, or the level really, you might have to ask easier questions to the younger kids, but, that's about it. All kinds of players find this a more fun way to learn (Bill).

Interview question 4: "Can you interpret and define the ways you coached during your three observed coaching lessons?"

The terms Game-Based Approach (GBA), game-based method, discovery method, playing games approach, discovery style, constraints-based approach, indirect approach and modern way/ method were defined and interpreted in a similar manner among 11 (out of 13) of the coaches that employed these terms. Common interpretations and definitions among the coaches consisted of:

- Asking the players to respond to questions about technical and tactical skills and challenges.
- Permitting the players to primarily engage in game-play and rallying.
- Allowing the students to solve technical and tactical skills and challenges independent of the coach.
- Not directly and prescriptively informing the players *what* to do or *how* to do it.

Jimmy's response provides a specific example of this frequent occurrence:

> I mainly used a Game-Based Approach. In all the lessons I tried to get the students to figure out the answers for themselves … I asked questions and got them to discover for themselves. Using discovery methods or a Game-Based Approach (GBA) allows maximum participation. You shouldn't really tell the students, rather make them explore and find out on their own (Jimmy).

In the following response, it is clear to see that Andrea's definition and interpretation of the discovery method, the GBA, indirect method and modern way/method are analogous:

> The discovery method is about asking heaps of questions and discovery, it's all about questioning … it is really the modern approach to coaching tennis nowadays, the old traditional way of telling and being direct instead of using an indirect Game-Based Approach (GBA) is old fashioned really. Coaches have to let the students find out the answers. The Game-Based Approach (GBA) is the same really, ask questions and let the kids explore and find out for themselves. I reckon that I used these most of the time … if not all the time (Andrea).

All 13 coaches additionally commented on the specific role of the coach in these *ways* of coaching tennis. All the interviewees believed that when delivering a tennis session the coach should withdraw from hitting (feeding) tennis balls to players, and not directly and prescriptively informing students on how to perform various skills. In this case, the players should commence an activity by hitting (feeding) themselves. Furthermore, it was asserted by all coaches that the primary role of the coach, in this *way* of coaching tennis, is to repeatedly pose questions to the learners who must make their own decisions and determine answers to technical and tactical problems. An example of this can be seen in Patrick's response:

> You let kids figure it out what to do. Let them decide what to do and how to do it. You try and ask lots of questions. The coach doesn't get involved in the lesson like feeding or anything like that. Just let the kids play and discover answers for themselves (Patrick).

Table 2. **Outline of the terms that the interviewed coaches (*n* = 13) used interchangeably and common examples of these definitions and interpretations**

Coaching terms listed by coaches that were used interchangeably	Common examples of definitions and interpretations associated with the terms listed by coaches
• Game-Based Approach (GBA> • Game-based method • Discovery method • Playing games approach • Discovery method • Discovery style • Constraints-based approach • Indirect approach.	• "Asking questions" • "Pose lots of questions" • "Let kids play games" • "Let them make the decisions" • "Let them rally and explore the solutions" • "Allow the players to figure it out" • "Don't tell them how to do it" • "Let the players explore and figure out the answers on their own" • "Questioning and answering of challenges, rather than being direct and telling"

Interview question 5: "Can you interpret and define any additional ways of coaching tennis?"

Terms such as technique-based approach, traditional approach, direct style, and command approach were largely used synonymously and comparably defined and interpreted by the coaches. The additional *ways* of coaching tennis were generally interpreted and defined by the coaches as:

- Developing the technical skills of the players.
- Providing prescriptive information directly to the players to develop these technical skills.
- Hitting tennis balls to players (feeding tennis balls) to players to enable them to develop their technical skills.

David's comment sums up coaches interpretation of the 'traditional' approach:

> The traditional method of coaching is feeding balls to players to get their technique right. Lots of repetition and lots of direction and telling the children what it is they must do. It's really all about technique-based instructions […] getting the technique right first (David).

Table 3 provides an outline of the terms that the coaches interviewed in this study (n = 13) used interchangeably when asked to describe any additional *ways* of coaching tennis of which they were aware of. It also delineates the common definitions and interpretations associated with these terms.

Table 3. Outline of the additional terms that the interviewed coaches used interchangeably and common examples of these definitions and interpretations

Coaching terms listed by coaches that were used interchangeably	Common examples of definitions and interpretations associated with the terms Listed by coaches
• Technique-based approach • Traditional approach • Direct style • Command approach	• "Feed lots of balls" • "Feeding lots of balls to the players" • "The coach makes all the decisions" • "Getting the kids to do what you want exactly" • "Lots of repetition and lots of direction" • "The coach does a lot of talking and telling" • "Very traditional" • "Old fashioned" • "Perhaps outdated" • "Very direct" • "Quite a traditional way"

Interview question 6: "Can you outline and discuss your reasons for adopting these ways that you coached during the three observation sessions?"

The earlier quote by Tegan for the reasons for adopting the *ways* she coached during her three observed coaching sessions provided a fair representation of what the coaches thought about this question. That is, a GBA produces better learners and better players because the players are placed in practice conditions where they have to be problem solvers. A majority of the coaches (n=11) also believed that by employing this *way* of coaching, the players were more motivated and had more fun during coaching sessions. Nicole strongly believed: "It's the best way but really it's the most fun for the kids, they love it, lots of action and questions, they are in control, the coach isn't directly telling them what to do" (Nicole). Similarly, Jill noted: "Game-Based Approach (GBA) is more fun for the kids, than direct ways of coaching … they learn better and more in this way of coaching" (Jill). All the coaches commented that the choice and employment of a particular *way* of coaching did not alter as a function of the age or ability of the players they coached. Each of the coaches specified that they used the same *way* of coaching in all of their coaching sessions, regardless of the age level or ability of their students.

Overall, the results highlighted a lack of knowledge concerning the theoretical and practical application of various teaching styles required for coaching tennis to junior players. It was also evident that the coaches lacked self-awareness with regard to their own coaching performance and were incapable of accurately describing the reasons why they implement particular *ways* of coaching. The interviews also revealed that coaches used an assortment of terms to identify the *way* they coach and that their decision to employ certain *ways* of coaching did not alter as a function of the age group, skill level or ability of the players they were coaching. Summary of the major findings from the interviews of the coaches are:

- A majority of the coaches (n = 11) nominated a mentor in addition to their experiences as a tennis student and the *way* they were taught as having the greatest influence on the *way* they currently coach;
- An assortment of terms are used by the coaches to identify the *way* they coach;
- All the coaches claimed to have primarily implemented a Game-Based Approach during all of their observed coaching sessions;
- Common definitions and interpretations among the interviewed coaches of a Game- Based Approach (GBA) consisted of 'asking questions of students', 'letting the students play games' and 'allowing the students to solve answers to movement challenges' and 'not feeding balls the players';
- Having fun' and the 'best way to learn' were commonly submitted as reasons for employing particular *ways* of coaching during sessions;
- The coaches lacked an ability to accurately describe the *ways* they coached during their observed coaching sessions;
- Despite the coaches' limited awareness of the *ways* they coach during coaching sessions, they did display an ability to articulate the type of

learning environment they wished to produce and behaviours they wanted to encourage;
- The coaches possessed limited knowledge, however, of the reasons why these behaviours might be of benefit; and
- The coaches' decision to employ certain *ways* of coaching did not alter as a function of the age group, skill level or ability of the players they were coaching.

DISCUSSION

In the discussion, we refer to all the coaches who participated in as a collective group (n = 13). We deemed it prudent to combine the group owing to the same interview schedule (i.e. interview questions, duration of interview) in addition to similar conclusions emanating from the participants' responses.

An analysis of the coaches' narratives indicated that observing and/or discussing aspects of coaching with a mentor as well as playing experience had a greater influence on current coaching behaviour than attending an accreditation course. These reflections were consistent with other research findings. In a review of the development of coaching as a profession, Woodman (1993) suggested that the basis of improved coaching lies with coach education and development programs. Considering that coaching accreditation is acquired following the successful completion of a formal course it might be expected that this source of learning would serve as the most important. However, there exists evidence that formal education accreditation programs are only one of a number of methods that coaches consider important in learning to coach.

To date, a number of scholars have empirically approached the critical question of how coaches learn and to what value they attribute these methods to becoming coaches (Bloom, Durand-Bush, Schinke & Salmela, 1998; Bloom, Salmela & Schinke, 1995; Cote et al., 1995; Fleurance & Cotteaux, 1999; Gould, Giannini, Krane & Hodge, 1990; Irwin, Hanton & Kerwin, 2004; Jones, Armour & Potrac, 2004; Lemyre, Trudel & Durand-Bush, 2007; McCullick, Belcher & Schempp, 2005; Salmela, Draper & Desjardins, 1994; Salmela, 1995; Schinke, Bloom & Salmela, 1995; Wright, Trudel & Culver, 2007). While there is some disparity among these studies as to the perceived level of importance of formal coach accreditation programs, there is agreement that other learning experiences perform a substantial role in the acquisition of knowledge. These alternative experiences include: playing experience, mentoring, discussions with other coaches, observation and professional experience.

The responses to interview question 1: "Could you identify or tell me what has or have been the major influences on the *way* you currently coach?" showed no coaches in this study mentioning the impact or influence of the formal accreditation coaching courses on their coaching presents potentially important ramifications for continuing professional development. In hindsight, it would have been useful to explore whether the participants recognised they were copying a coaching mentor or role model, and upon reflection did this person use a direct or GBA. While the coaches were using the language of GBA evident in coaching documents to describe their practice, as a majority of the coaches identified a mentor as exercising the greatest degree of influence on the *way* that they coached tennis, it is incumbent upon coach education providers to explore avenues that may provide a more profound impact on the coaches' instructional processes during accreditation courses. Furthermore, education initiatives involving the mentors of course participants may also prove beneficial. This might consist of information pertaining to the benefits of implementing a variety of teaching styles in addition to a greater awareness of the theoretical assumptions that underpin these practices.

The findings also revealed that coaches in his study utilised a variety of terms to describe the *way* that they coached, and that many of these terms were used interchangeably. The responses recorded by the coaches shared similarities with other research. According to Bailey and Macfadyen (2007) teaching models, strategies, approaches, methods, styles, practices and formats are terms that have been employed interchangeably in educational literature. Similarly, Ashworth (1998) has reported that classroom teaching-learning procedures have been directed by the following terms including: teaching models, strategies, styles, methods, behaviours, techniques and practices. In a review of the literature that clarified the specific definitions and distinct purposes of these terms, Ashworth (1998) found that these terms are:
- Common, frequently used, and often interchanged in our professional literature.
- Not in competition, but rather used as synonyms.

- Used to offer recommendations about how to structure the teaching/learning interaction (p. 119).

The study by Ashworth also revealed that "the data did not support any consistent or precise definition for these individual terms; rather the definitions of these teaching options (methods, styles, strategies, etc.) were arbitrary and personalised according to each author's usage" (p. 119). Correspondingly, many tennis coaching accreditation manuals use terms interchangeably when referring to particular instructional practices. Coach education accreditation manuals from the International Tennis Federation (ITF) and Tennis Australia (TA) describe teaching styles (command, direct, indirect and discovery) and coaching approaches (traditional, technique-centred, game-centred, game-based, integrated, situational, complex, total, holistic, constraints-based and modern) (Crespo & Reid, 2009; Tennis Australia, 2010a, 2010b). Furthermore, some scholars have asserted:

> In tennis, the conceptualisation of different coaching approaches or philosophies has been confounded by disparate terminology and coaching parlance. This has led to a certain ambiguity in global tennis coaches' education and exacerbated the extent to which the instruction of the game is anecdotally based (Reid et al., 2007, p. 1).

What appears to be lacking in these publications is a framework of common terminology that clearly defines specific *ways* that are available for tennis coaches to coach during coaching sessions. In the absence of consistency in terminology, "reliable communication, accurate implementation, and assessment of ideas are difficult if not impossible" (Mosston & Ashworth, 2008, p. 3). Moreover, the inconsistent use and understanding of terminology creates confusion and leads to the misinterpretation of events that ultimately limits educational practice (Mosston & Ashworth, 2008). It could be asserted that the anecdotal declarations by some researchers in connection to tennis coaches using "disparate terminology and coaching parlance" (Reid et al., 2007, p. 1) have been empirically supported in this study. In spite of the coaches describing a range of terms that were often used synonymously, their definition and interpretations were remarkably similar. The coaches interpretations a GBA align with many of the recommended practices associated with indirect instruction. The implementation of questions requires a player to implement different levels of thought processes to respond and is considered a beneficial coaching behaviour that promotes a player's active learning through problem solving, discovery, and an awareness of performance (Chambers & Vickers, 2006). As indicated earlier, a noticeable discrepancy was realised between the self-identified use of teaching styles and what was evident during the observations.

The findings of this study demonstrated that all the coaches who were observed provided highly prescriptive and direct instruction during their observed coaching sessions. In spite of this, all the coaches during the interviews stated that they believed that they created a learning environment that encouraged players to make decisions and respond to questions about technical and tactical skills and challenges.

Beyond mentioning that these types of instructional processes were the most effective when conducting coaching sessions, the coaches were unable to explain why this was so. This situation was perhaps similar to what Light (2008) calls an epistemological gap, or cognitive dissonance. This is evident when practitioners utilise the language of particular instructional guidelines or *ways* of coaching, but persist in coaching in an alternative *way* owing to a lack of understanding (Davis & Sumara, 2003; Light, 2008).

Similar to previous research (Partington & Cushion, 2011; Smoll & Smith, 2006), the results of the interviews suggested that coaches were incapable of accurately describing their individual coaching behaviours. This strongly indicated that the coaches exhibited a reduced self-awareness of their coaching in practice. This point was further demonstrated when the coaches were requested to provide feedback and commentary after viewing their video-recorded coaching sessions prior to the interview. All the coaches expressed a high degree of surprise and disbelief as to what transpired during these coaching sessions. Each coach indicated and acknowledged an apparent lack of compatibility about what they believed had happened during the sessions and what actually ensued with regard to the *way* that they coached. As indicated in the Results, all the coaches strongly believed that they had coached in a particular *way* that emphasised elements that could be ascribed to a GBA.

Motivation and engagement were cited by the coaches as the reason for use of GBA. In connection

with learning in the affective domain (i.e., emotion, fun, enjoyment) Oslin and Mitchell (2006), found that GBAs were considered to be more enjoyable, and learners reported elevated levels of motivation when participating in Physical Education lessons (Griffin, Oslin & Mitchell, 1995). Similarly, research conducted by Light (2003) and Light and Georgakis (2005) suggested that a GBA produced increased enjoyment and empowerment, greater engagement and improved physical activity levels in learners. Research that has explored games learning in connection to the affective domain have provided support for the claims that GCAs can be more engaging and motivating than doing drills (Jarrett & Harvey 2014).

The results from the interviews in this study revealed, however, that the coaches believed that a GBA, consisting of high levels of indirect instruction, is the most effective *way* to coach tennis. This might indicate that the coaches assumed importance and benefits of this type of instructional processes in developing practice engagement. Although research has been conducted into the adeptness of GBAs compared with a technique-centred approaches, or as Kirk (2010) described a sport as sport techniques approach, evidence of the authority of one or the other concerning the development of motor skill acquisition is equivocal (Oslin & Mitchell, 2006).

Throughout the course of the interviews, all coaches commented that the choice and employment of a particular *way* of coaching did not alter as a function of the age or ability of the players whom they coached. Each of the coaches specified that they used the same *way* of coaching in all of their observed coaching sessions regardless of the age level or ability of their players. Furthermore, nearly all the coaches stated that they did not believe that they should be required to change the *way* they coach. The six Club Professional (CP) coaches, who primarily instructed players of an intermediate level between the ages of 6 and 8 years, stated that they employed the same *way* of coaching regardless of the age or ability of the player. The responses from the seven Junior Development (JD) coaches who spent most time coaching players of a beginner level aged between 4 and 5 years indicated similar thoughts.

These beliefs are in stark contrast to literature concerning the use of various teaching styles (Byra, 2006; Rink, 2001; Rukavina & Foxworth, 2009; Whipp, Taggart, & Jackson, 2012). A common conception among these authors stipulates that coaches should cater and respond to the needs of all learners, with consideration being provided to the player's developmental readiness, interest, and competence. Mawer (1995) suggests that "as no one method covers all eventualities, the effective teacher will have the ability to switch, mix, and blend teaching strategies to suit his objectives and pupil responses" (p. 228). Rink (2001) expressed similar pedagogical sentiments to Mosston and Ashworth (2008) in that "there may not be a best way to teach, but there may be a best way to teach particular content to particular learners" (p. 123).

CONCLUSION

While the sample of coaches interviewed for this stage of the study limited its capacity for generalisation to all tennis coaches it does provide worthwhile information with regard to the insights into the teaching styles that coaches employ during coaching sessions. It also offers support for the claim by Bowes & (2006) that coaching is a complex process that has been oversimplified in the coaching literature and in coach development programs. More specifically, it highlights that coaches in this study lacked knowledge concerning the theoretical and practical application of various teaching styles required for coaching. It additionally revealed that coaches lacked self-awareness and an understanding in relation to their own coaching performance.

The points discussed here have implications for curriculum initiatives in coach education as well as for future professional development opportunities. The learner guides used in the accreditation coaching courses in Australia recommend that tennis coaches should combine the use of direct and discovery teaching styles with the latter nominated as the preferred teaching style (Tennis Australia; 2010a, 2010b). The predominant use of technique orientated coaching is not necessarily compatible with the favoured teaching processes identified in these publications. The necessity for coaches to understand and purposefully implement a range of teaching styles to achieve various learning outcomes is paramount. As no one teaching style encompasses all learning eventualities, an effective coach must possess the capability to change and combine teaching styles during sessions. Furthermore, GBA like the Australian developed Game Sense approach are not 'game only' pedagogical models and include the necessary use of a multiplicity of teaching styles as dictated by the task objective

within the generalised GBA coaching structure of game-reflect and practice-game. However, if tennis coaches are to understand their behaviours and if they are to value the limitations and possibilities associated with these behaviours they must firstly know what they are doing. The finding from this study is that the personally anticipated coaching behaviour of the coach was not what they realised upon observation of their coaching, which was thought to be game-based but was largely technique centred and directive command and practice style coaching.

Lyle and Cushion (2010) have described coaching research as neglecting to characterise satisfactorily the practice of coaching and as failing to impact on coach education. Coaches are often confronted with nebulous challenges and their practice is repeatedly exposed to elevated levels of variability and ambiguity. Sport pedagogy specialists have argued that the constrictions of practice may be specific to a particular context or common to all coaches, however, our current understanding of *what* they do and *why* they do it is largely limited (Lyle & Cushion, 2010; Mallett, 2005; Saury & Durand, 1998). Therefore, research that considers "what coaches do and why they do it, still offers much in developing our understanding about coaching" (Cushion, 2010, p. 44).

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NON-FORMAL PHYSICAL EDUCATION OF CHILDREN: INCREASE FACTOR OF PHYSICAL ACTIVITY AND PHYSICAL FITNESS

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ABSTRACT

Background. Studies on physical activity, which is positively associated with physical fitness, reveal that children's activity is not sufficient (BHFNC, 2010; Chen, Zheng, Yi, & Yao, 2014; *Currie et al., 2012*), and their physical fitness deteriorates (Volbekienė & Kavaliauskas, 2002; Мирошниченко & Астраханцев, 2005; Синявский, Власов, & Сергеев, 2009). Non-formal physical education (NFPE) is one of the means to increase children's physical activity and physical fitness. The aim of this study was to determine the influence of NFPE on the physical fitness of 6th grade pupils.

Methods. The research was conducted in May, 2013; 356 six-graders (48.0% of girls) from four Klaipėda city comprehensive schools participated in the research. As many as 56.5% of children (48.3% of girls) participated in NFPE in school and out of school. The participants completed five physical fitness tests.

Results. Independent *t* test revealed that the results of boys who attended the NFPE group of cardiorespiratory fitness, $t(180) = -2.093$, $p = .038$; upper body muscular strength and endurance, $t(182) = 2.413$, $p = .017$; abdominal muscular strength and endurance, $t(186) = 3.282$, $p = .001$; explosive leg power, $t(183) = 1.967$, $p = .049$, and girls' results of abdominal muscular strength and endurance, $t(172) = 2.687$, $p = .008$ were significantly higher than those in the NFPE non attended group.

Conclusion. Non-formal physical education is a meaningful educational form for increasing children's, particularly boys', health related physical fitness; therefore it is purposeful to encourage children to participate in physical activities in school and after classes.

Keywords: non-formal physical education, physical fitness, testing.

INTRODUCTION

Physical activity is important to the overall health and well-being of everyone, including all school-age children. The benefits of physical activity are well-documented and involve the mitigation of many health risks, including those for developing Type 2 diabetes (Costanian, Bennett, Hwalla, Assaad, & Sibai, 2014; Rottensteiner et al., 2014), high blood pressure and high blood cholesterol (Carpio-Rivera, Moncada-Jiménez, Salazar-Rojas, & Solera-Herrera, 2016; Heshmat et al., 2016). Physical activity also contributes to the building and maintenance of healthy bones and muscles (Sioen et al., 2015), to improve positive mental health (Hilmn, Erikon, & Kramer, 2008; Nguyen – Michel, Unger, Hamilton, & Spruijt-Metz, 2006; Wang et al., 2010), and health-related physical fitness (HRPF) (De Baere, Philippaert, De Martelaer, & Lefevre, 2016; Malacko & Pejčić, 2009).

HRPF components are cardiorespiratory fitness, muscular strength and endurance, flexibility and body composition (Gallahue & Ozmun, 2006; Volbekienė & Kavaliauskas, 2007). One of the most important components is cardiorespiratory fitness. Its training improves cardiac function and peripheral blood flow and enhances the capacity

of the muscle fibres to generate greater amounts of adenosine triphosphate (Kenney, Wilmore, & Cosill, 2012; Skernevičius, Milašius, Raslanas, & Dadelienė, 2011). Minimal levels of muscular fitness are needed to perform activities of daily living, to maintain functional independence as one age, and to partake in active leisure-time pursuits without undue stress or fatigue (Heyward, 2010).

Empirical research estimated that sixth graders' (12−13-year-old children) daily physical activity is not sufficient (BHFNC, 2010; Chen et al., 2014; *Currie et al., 2012;* Schneider, Dunn, & Cooper, 2009) and their physical fitness diminishes (Volbekienė, & Kavaliauskas, 2002; Мирошниченко & Астраханцев, 2005; Синявский et al., 2009).

Lessons of physical education are the primary form of the activity children receive at school, but only several countries require daily physical education. Further, physical education programs provide only up to 8−11% of children's daily physical activity. One of the strategies to increase activity is to promote it within the non-formal physical education (Beets, Beighle, & Erwin, 2009). California Department of Education (2009) and Carrel et al. (2011) denote that these activities may be the only place where children can regularly engage in physical activity and to seek to increase their physical fitness.

In different countries different words are used to describe more or less the same activities: extracurricular education, after school education, or extra school education. In this study we will use the term of non-formal physical education (NFPE).

The effectiveness of NFPE usually is measured by analyzing NFPE impact on physical activity (Gortmaker et al., 2012; Lubans & Morgan, 2008), while some literature sources focused on the influence of NFPE on 13-year-old children's health-related physical fitness.

Research by data Carrel et al. (2011), Da Silva, Fisberg, de Sousa Pires, Nassar, and Sottovia (2013) demonstrate that NFPE curriculum in school can improve body composition. Drake et al. (2012) conducted telephone surveys with 1718 high school students and their parents. The scientists estimated that team sport participation had the strongest and most consistent inverse association with weight status. Ara et al. (2006) analysed the effect of NFPE on physical fitness during growth in early pubertal males and found that children who attended NFPE and were physically active at least 3 h per week during 3 years maintained their physical fitness during growth, while it deteriorated in physically inactive children.

Hypothesis: most of six-graders do not participate in NFPE and HRPF is insufficient. Children who participate in NFPE at least once a week have higher indices of HRPF than those who do not participate in NFPE.

The aim of this study was to determine the influence of NFPE on the physical fitness of 6th grade pupils.

METHODS

Participants. Research participants were 356 six-graders (48.0% girls) from four Klaipeda city comprehensive schools; 56.5% of children (48.3% girls) participated in NFPE at least once a week**.** *Duration* of each training *session* was 1−2 hours. In this research NFPE was defined as a purposeful physical education, organized in school or out of school after the regular school day.

Statistically significantly more boys participated in sports than girls $t(370) = 3.062$, $p = .002$. The duration of attendance was 2.89 ($SD = 2.29$) years. With regard to gender the attendance duration did not differ significantly, $t(370) = -1.582$, $p = .114$. The average age of the participants was 13.00 ($SD = 0.26$) years.

Methods. The research was conducted in May, 2013. All physical fitness tests as well as height and weight measurements participants were taken during physical education lessons (one test/ measurement per one lesson).

Consistent with recommendations (Volbekienė & Kavaliauskas, 2002; Heyward, 2010) health-related physical fitness components, which are body composition, flexibility, muscular strength and endurance, and cardiorespiratory fitness, of all study participants were assessed by the physical fitness tests described below.

Height was measured using roller height meter (Seca, Model 206, Germany). The height meter was mounted on the wall and the participants stood erect, barefooted, and looked straight ahead. Before being measured or weighed, pupils were asked to remove their shoes and outer clothing, such as jackets. Height was measured to the nearest half centimetre. *Weight* was measured to the nearest 0.1 kilogram using a calibrated scale (Seca, Model 709, Germany) that was zero balanced before each pupil was weighed. *Body mass index* of the participants

Table 1. **Distribution of sixth grade pupils' participation and non-participation in NFPE**

The distribution of participants			Girls (%)	Boys (%)	Total (%)
Non-attending NFPE			51.7	36.3	43.7
Attending NFPE	In school		19.7	19.7	19.7
	Out of school	Totally	28.8	44.0	36.6
		Dance	12.4	1.6	6.7
		Swimming	3.9	7.8	5.9
		Football	0.6	8.8	4.9
		Dual sports	1.1	8.3	4.9
		Basketball	1.1	7.8	4.6
		Other	9.7	9.7	9.6

was calculated from their respective height and weight using the relation = weight/height^2.

Sit and reach (lower back flexibility). The sit and reach was scored at the most distant point (in cm) of reaching on a ruler with the fingertips. A sit and reach box was a specially constructed box with the measuring scale where 23 cm was at the level of the feet. Each participant was given two trials and the best result was chosen. The pupil removed his/her shoes before sitting at the test apparatus with the knees fully extended.

Sit ups in 30 seconds (abdominal muscle strength and endurance). The sit ups test was scored as the number of sit-ups performed within a 30 s period. The adolescent lay down on a mat with knees bent at right angles and hands behind the head. The ankles were firmly held by a partner for support and maintaining the count. The pupil's elbows touched the knees during the execution of the test.

Flexed-arm hang (upper body strength and endurance). Flexed-arm hang was scored as the total time is seconds. The participant climbed the ladder to a height so that the chin was at the level with the bar. They grasped the overhead bar using an overhand grip (palms facing away from body), with the hands at shoulder width apart. On the command, "ready, go" the pupil removed their feet from the ladder, and timing started. The pupil had to attempt to hold this position as long as possible. Timing was stopped when the pupil's chin fell below the level of the bar or the head tilted backward to enable the chin to stay at the level with the bar.

Standing long jump (explosive leg power). Standing long jump was scored as the longest distance jump in centimetres. The participant stood behind a line marked on the ground with feet slightly apart. A two foot take-off and landing was used, with swinging of the arms and bending of the knees to provide forward drive. The pupil attempted to jump as far as possible, landing on both feet without falling backwards. Two attempts were allowed.

One mile walk/run (cardiorespiratory fitness). One mile walk/run was measured in minutes. The participants were instructed to try to keep a steady speed and finish running as fast as possible. Walking was permitted when the pupil could not continue running.

Data analysis. Descriptive statistics were calculated (including means (*M*) and standard deviation (*SD*)) for each physical fitness component. One – Sample *T* test was used to examine the mean difference between the sample and the known value of the population mean. Independent *t* test was used to examine test differences between two independent (NFPE attended and non-attended) groups. For all the tests, statistical significance was set at $p < .05$. All statistical analyses were performed with the Statistical Package for Social Sciences (SPSS) (version 20.0 for Windows).

Research ethics. All the participants of the research were introduced to research aim and the agreements of them and their parents/guardians were received.

RESULTS

Descriptive statistics were used to describe the basic features ((the means (*M*) and standard deviation (*SD*)) of the data in a study. Table 2 presents HRPF results of NFPE attending and non-attending groups, and Lithuanian sixth graders' HRPF results.

One – Sample *T* test shows that indices of the explosive leg power, $t(81) = 0.661$, $p = .510$ and abdominal muscular strength and endurance, $t(84) = 0.230$, $p = .819$ among girls, attending NFPE, and of Lithuanian sixth grade girls did

Table 2. **Health-related physical fitness (HRPF) results (mean, standard deviation)**

Components of health-related physical fitness	Girls				The results of Lithuanian girls' HRPF (2002)	Boys				The results of Lithuanian boys' HRPF (2002)
	NFPE attending group (n = 82)		NFPE non-attending group (n = 86)			NFPE attending group (n = 120)		NFPE non-attending group (n = 68)		
	M	*SD*	*M*	*SD*	*M*	*M*	*SD*	*M*	*SD*	*M*
Cardiorespiratory fitness (1 mile walk/run (s))	651.8	79.2	659.2	79.4	-	579.0[ac]	110.4	614.4	108.7	-
Upper body strength and endurance (Flexed-arm hang(s))	8.18	8.49	8.49	9.87	*11.5[ab]*	15.85[c]	13.68	11.3	9.64	*19.6[ab]*
Abdominal muscle strength and endurance (Sit ups in 30 seconds (n/30s)	23.31[c]	4.25	21.72	3.52	*23.20[b]*	26.05[c]	4.47	23.65	5.39	*25.54[b]*
Explosive leg power Standing long jump(cm))	156.37	26.73	152.16	21.86	*154.41*	175.57[c]	24.26	168.15	25.15	*171.86*
Lower back flexibility (Sit and reach (cm))	22.91[a]	6.81	22.40[b]	7.20	*20.69*	17.77	6.30	17.06	6.45	*17.34*
BMI (kg/m²)	19.70	3.09	19.49	3.74	*18.7*	19.14[a]	3.18	19.79[b]	3.59	*18.1*

Notes. *M* = mean; *SD* = standard deviation; NFPE – non-formal physical education.
[a] – Significant differences between NFPE attending group and Lithuanian sixth grade pupils.
[b] – Significant differences between NFPE non-attending group and Lithuanian sixth grade pupils.
[c] – Significant differences between NFPE attending and non-attending groups.

not differ significantly. However, statistically significant differences were found for other HRPF components: results of upper body muscular strength and endurance, $t(79) = -3.505$, $p = .001$ were lower and results of flexibility, $t(81) = 2.950$, $p = .004$ and BMI, $t(79) = 2.888$, $p = .005$ were higher comparing girls attending NFPE with the Lithuanian sixth grade girls.

There were no significant differences in explosive leg power, $t(88) = -0.972$, $p = .334$, and BMI, $t(85) = 0.054$, $p = .789$, in girls non-attending NFPE group compared to the Lithuanian sixth grade girls. Results of upper body muscular strength and endurance, $t(86) = -2.851$, $p = .005$, and abdominal muscular strength and endurance, $t(88) = -3.970$, $p = .000$, were worse and flexibility, $t(86) = 2.934$, $p = .004$, was better in girls non-attending NFPE, group.

No significant differences were found for the abdominal muscular strength and endurance, $t(119) = 1.249$, $p = .214$; explosive leg power, $t(118) = 1.669$, $p = .098$; flexibility, $t(116) = 0.737$, $p = .462$ among boys attending NFPE and of Lithuanian sixth grade boys. Results of upper body muscular strength and endurance, $t(115) = -2.952$, $p = .004$, were lower and BMI, $t(122) = 3.606$, $p = .000$ was higher in NFPE attending group compared to Lithuanian sixth grade boys.

There were no significant differences in explosive leg power, $t(67) = -0.360$, $p = .720$; flexibility, $t(67) = -0.360$, $p = .720$, in boys non-attending NFPE compared to the Lithuanian sixth grade boys. Results of upper body muscular strength and endurance, $t(67) = -7.097$, $p = .000$; abdominal muscular strength and endurance, $t(67) = -2.897$, $p = .005$, were lower and BMI, $t(66) = 3.856$, $p = .000$, was higher in boys non-attending NFPE.

The results of the independent t test indicated that there was a statistically significant difference in abdominal muscular strength and endurance between NFPE attending and non-attending girls, $t(172) = 2.687$, $p = .008$. There was no significant difference between these groups in other HRPF tests, $p > .05$.

Boys' results in the NFPE attending group of cardiorespiratory fitness, $t(180) = -2.093$, $p = .038$; upper body muscular strength and endurance, $t(182) = 2.413$, $p = .017$; abdominal muscular

strength and endurance, $t(186) = 3.282$, $p = .001$; explosive leg power, $t(183) = 1.967$, $p = .049$, were significantly higher than in the NFPE non-attending group. Only indices of flexibility, $t(183) = 0.734$, $p = .464$ did not differ significantly. There was no significant difference between NFPE attending and non - attending groups in the BMI, $t(188) = -1.294$, $p = .197$.

DISCUSSION

This study examined the HRPF of sixth grade pupils and the impact of a NFPE on it. NFPE is deliberately chosen by children, planned and purposeful after-school physical education. It was hypothesized that most six-graders did not participate in NFPE and their HRPF was insufficient. Children who participate in NFPE at least once a week have higher indices of HRPF than those who do not participate.

The studies have found that children can obtain up to 50% of their daily recommended physical activity only in the after-school period (Olds et al., 2008; Tudor-Locke, Lee, Morgan, Beighle, & Pangazi, 2006). However, a lot of pupils do not participate in NFPE.

According to the study by the Sports Council for Wales (2009), 47% of secondary school age pupils take part in NFPE regularly (at least once a week). Football (47%) remains the most popular club activity for boys by a considerable margin, followed by rugby (32%). Dance and swimming are the most popular activities for secondary school girls. The comparable data were gained by Kromerova and Šukys (2013). The scientists revealed that among research participants, 43.4% ($n = 167$) were involved in competitive sports. In our study about half (56.3%) of children participated in NFPE. As in the research of the Sport Council of Wales (2009), most of the boys attended football, while girls attended dance classes.

Studies have suggested that children's HRPF is insufficient and decreasing. Depending on the test, between 28 and 74% of 12.4-year-old American Indian youths are in the healthy fitness zone. The majority of participants failed to meet healthy fitness zone for muscular strength and estimated body composition. Overall, 7% of the students were in the healthy fitness zone for all five components and 6% failed to reach the healthy fitness zone for any of the tests (Brusseau, Finkelstein, Kulinna, & Pangazi, 2014). In the study by Garber, Sajuria, and Lobelo (2014), 26% of boys and 55% of girls had unhealthy cardiorespiratory fitness, 29% of boys and 35% of girls had unhealthy musculoskeletal fitness, 29% of boys and 44% of girls had unhealthy BMI.

We observed that in NFPE attending group results of muscular fitness (except for upper body muscular strength and endurance) were higher than the country average values. BMI was higher than average values of sixth-graders in Lithuania. The results of muscular fitness of sixth-graders not attending NFPE were lower, and BMI, as in the group attending NFPE, were higher than the average values of sixth-graders in Lithuania. The cardiorespiratory fitness of all children groups (except for boys attending NFPE – below sufficient) according to Volbekiene and Kavaliauskas (2007) were estimated as insufficient.

Photiou et al. (2008) compared some selected morphological and functional parameters of 7–14-year-old Hungarian schoolboys living in the middle of the 1970s and at the beginning of the new millennium. Means of height, body mass, body mass index, the sum of five skinfold tests, percentage of body fat, and two running performance times (400 m and 1.200 m) of the boys ($n = 3672$) studied in 1975 were compared to those of the boys ($n = 3758$) in 2005. Scientists observed significant secular changes in body mass and height. In addition, boys in 2005 had significantly more subcutaneous fat compared to 1975. The running times for the two distances were significantly poorer at the time of the second investigation. Similar trends were found for the Lithuanian children's physical fitness. Volbekienė and Kavaliauskas (2002) found, that during 10 years (1992−2002) for both genders sixth grade pupils' flexibility and cardiorespiratory fitness as well as girls' standing long jump and boys' upper body strength and endurance indices got worse statistically significantly. Comparing our research results with Lithuanian sixth graders' physical fitness data in 2002, we determined very similar tendencies: pupils' upper body muscular strength and endurance deteriorate, though their BMI increases. Estimating the indices of participants' cardiorespiratory system endurance, with reference to Volbekienė and Kavaliauskas (2007), we can maintain that 1610 meters run/walk results of six-graders are at a low level. We recommend including more exercises for upper body strength and endurance and cardiorespiratory fitness into their physical education, and providing pupils with the knowledge about benefits of these exercises for health enhancement and strengthening.

NFPE programs that include a physical activity component can be effective in improving physical activity levels and physical fitness. Results of this study suggest that cardiorespiratory fitness and musculoskeletal fitness for boys who participated in NFPE were statistically significantly ($p < .05$) higher than those in the group of non-attending NFPE. Similar results were found by London and Gurantz (2013). The scientists estimated that participation in fitness-focused NFPE programs was associated with a 10% increase in the probability of being physically fit after 2 years. This finding held for nearly all subgroups, including students who were initially unfit. Participation in 2 years of the program was associated with a 14.7% increased likelihood of subsequent fitness compared to 8.8% for 1 year of participation.

However, our study has shown that results for girls who participated in NFPE were marginally better than those who did not participate in NFPE. Only one test – Sit ups in 30 seconds (abdominal muscle strength and endurance) – indices statistically significantly differed, $p < .05$. Whereas most of the girls attended dance classes, the assumptions that dance classes did not have significant impact on girls' cardiorespiratory and musculoskeletal fitness can be done.

Arriscado, Muros, Zabata, and Dalmau (2014) found that the male students who performed at NFPE and those at earlier stages of development reported higher levels of physical activity. The direct correlations between physical exercise and fitness were detected, especially with respect to aerobic capacity ($r = .38$), and inverse correlations with hours in front of a screen ($r = -.18$), but not with body composition. The NFPE influence on BMI also was not determined in our research.

Future research should examine the types of activities, duration of physical activity, and extent of participation for girls in NFPE programs aiming to better understand the link between NFPE programs and girls' physical fitness.

CONCLUSION

More attention must be paid to training sixth grade pupils' upper body muscular strength and endurance as well as cardiorespiratory fitness. Non-formal physical education is a meaningful educational form for increasing children's, particularly boys', health related physical fitness, therefore it is purposeful to encourage children to participate in physical activities in school and after classes.

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EVALUATION OF EDUCATIONAL SCHOOL ENVIRONMENT AND ACADEMIC SELF-EVALUATION OF ADOLESCENT ATHLETES AND NON-ATHLETES

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ABSTRACT

Background. Grigaliūnienė, Vėlavičienė, Šulga, and Keblys (2007) have revealed that meaningful relationships with teachers are influenced by positive attitudes towards them with a good emotional atmosphere in the classroom and a positive microclimate between pupils and teachers. Many scientists point out that education in sports activities positively impacts the development of adolescents' communication and collaboration with peers and adults, adequate self-evaluation and other positive personality characteristics (Kremer-Sadlik & Kim, 2007; Ream & Rumberger, 2008). Research aim was to determine the evaluation of educational school environment and academic self-evaluation of 11–15-year-old adolescent athletes and non-athletes.

Methods. The research was conducted in 2015. We questioned 209 adolescents, aged 11–15 years. In order to determine adolescents' attitudes towards school educational environment, the survey included the following scales: "Teachers' help for pupils"; "Support of classmates"; "Positive relationship between adolescents and school"; "Attitude towards socioeducational school environment"; "Loneliness at school", and "Academic self-evaluation".

Results. The survey revealed that boys' attitudes to socioeducational school environment resulted to be better than that of girls ($p < .05$) and that younger adolescents felt more help from the teachers at school than older adolescents ($p < .05$), but they also pointed out that they experienced a stronger sense of loneliness at school ($p < .05$). More positive relationship was revealed between adolescent athletes and school ($p < .05$), but adolescent non-athletes had a better attitude to socioeducational school environment.

Conclusion. It was found that although adolescent non-athletes had a better approach to socioeducational school environment, their peer reported having a better link with school.

Keywords: attitude, adolescent athletes, adolescent non-athletes, feeling at school, sports activity.

INTRODUCTION

Adolescents spend the largest part of their time at school, therefore, the factors directly related to school – peers, teachers, their assessment and relationship with each other – appear to be highly important. The emotional state for adolescents at school becomes of particular significance where feeling safe and welcome their individuality can grow and fully develop. During adolescence individuals search for themselves, their identity and seek to know the surrounding environment, which must be emotionally secure, dominated by parents, peers and teachers (Rupšienė & Kučinskienė, 2006). Grigaliūnienė et al. (2007) have revealed that meaningful relationships with teachers are influenced by the positive attitude towards them with a good emotional atmosphere in the classroom, and easily understandable classroom tasks encourage a positive microclimate between pupils and teachers. Relationships with teachers and adolescents result to be two-folded: either provide incentives and create a natural desire to learn and improve, or become the source of anxiety, tension and depressive mood (Dam & Volman, 2007; Rupšienė & Kučinskienė, 2006). Sinead

et al. (2011) suggest that adolescents discover discrepancies in the same field or object daily which could not have been noticed in an earlier age, thus, as identified by Markovienė (2001), a young person faces two problems continuously – the inner harmony and formation of harmonious relationship with an environment.

Adolescents' self-confidence and the confidence of those around them as well as an ability to find the right way for the situation that needs to be resolved impact their identity development and are related to the improvement of internal coherence and self-evaluation (Lengvinienė, 2004; Sinead et al., 2011). Bergh and Erling (2005) argue that during adolescence it is essential for adolescents to identify themselves through new relationships with peers. Being part of a group of peers is a key feature that distinguishes adolescence from other life periods. The adolescent peer group becomes the reference group enabling them to be aware of their own actions and develop social skills. Belonging to any clearly identified group, an adolescent can answer the question: "Who am I?". The inner need to communicate with their peers often becomes so strong that adolescents begin not to pay attention even to their parents (Barkauskaitė & Židonienė, 2001; Byrne, 2000; Vaičiulienė, 2004).

Many scientists point out that sports activities are characterized as a fundamental factor for the personality development. Education in sports activities affects not only individual physical skills but also cultural values, understanding and perception of behaviour standards (Bobrova & Augienė, 2009) and positively impacts the development of adolescents' communication and collaboration with peers, emotional stability, adequate self-evaluation, self-confidence, self-realization and other positive personality characteristics (Batutis & Gadeikis, 2009, Kremer-Sadlik & Kim, 2007; Ream & Rumberger, 2008; Šniras, Dumčienė, & Dumbliauskas, 2007; Weiss & Amorose, 2005). Being part of a sports group allows one to compare oneself with others, understand and assess one's successes and failures, build recognition and respect among other people and be noticed due to one's achievements (Bump, 2000; Martens, 1999).

The research results of Kremer-Sadlik and Kim (2007), Moreno and Cervello (2005), as well as Ream and Rumberger (2008) witness that adolescent athletes possess a higher perception of their competence in the field of social recognition, and this positively influences their perceptions of themselves and the world around them.

During adolescence competence is associated with the adolescents' sense of self-esteem. Moreno and Cervello (2005) as well as Šertvytienė and Laskienė (2008) indicate that the prevailing difference exists between adolescent athletes' and non-athletes' social competence and perception in a social recognition sphere. Adolescent athletes are self-confident, they are able to adequately express positive and negative feelings verbally and this positively affects their perception of themselves and the world around them. These characteristics could be attributed to adolescent non-athletes less. Kaffemanas and Gerulaitis (2001) indicate that adolescents who fail to follow the rules and regulations raised by their peers or other groups are more likely not to be included and be isolated from other adolescents.

Baron and Parker (2000) claim that adolescents belonging to a group are more likely to feel satisfied with life and themselves, constructively respond to the difficulties and problems as well as develop more successful interpersonal relationship with others.

Research object was Evaluation of educational school environment and academic self-evaluation of 11–15-year-old adolescents.

Research aim was to determine the evaluation of educational school environment and academic self-evaluation of 11–15-year-old adolescent athletes and non-athletes.

METHODS

The research was conducted in 2015. The school administration consent was received for the survey, the survey time was agreed with the teachers and social pedagogues. Totally 209 adolescents aged 11–15 years, learning in Kaunas city schools were surveyed in the research. The sample included 101 female and 108 male pupils, 105 respondents were 11–12 years old and 104 respondents were 13–15 years old, 99 athletes and 110 non-athletes. Adolescents' sports activities were determined by asking them questions about how many times a week an adolescent was engaged in sport (at a sports school, sports club or sports groups) and how many times a year they took part in sports competitions. The respondents who replied that were engaged in sports three or more times a week and participated in three or more sports competitions a year, were

Table 1. **Internal coherence indices of questionnaires**

Title of Questionnaire	Cronbach's α Coefficient	Number of Scale Statements
Teachers' Help for Pupils	.655	6
Support of Classmates	.659	6
Positive Relationship Between Adolescents and School	.786	18
Attitude Towards Socioeducational School Environment	.886	15
Loneliness at School	.900	5
Academic Self-Evaluation	.855	5

included into the athletes' group and the rest - to non-athletes'group.

In order to determine the attitude of the 11–15-year-old adolescent athletes and non-athletes to educational school environment, the questionnaire survey was performed. The study design was cross-sectional with self-reported questionnaires. For the analysis of the teacher's help for the pupils (that is, how much the teacher helped the pupils when they felt sad, how much the teacher helped the pupils to achieve their potential goals, how honest the teacher was with the pupils, and so on), the subjects were given a questionnaire comprised of 6 statements (Harter, 1985). For the analysis of classmates' support at school (that is, how much teenagers felt popular, liked, included and listened to by their peers), the respondents were given a questionnaire of 6 statements (Harter, 1985). In order to discover how much adolescents felt belonging and psychologically included into the school the questionnaire of 18 questions "The Positive Relationship Between Children and School" was used (Goodenow, 1993). In order to determine the adolescents' attitudes to school environment, including teachers, homework, marks and learning, the 15-question questionnaire was used. The examination of the adolescents' sense of loneliness and the ability to socially integrate at school was performed using "The Loneliness at School Questionnaire" (Kocheenderfer-Ladd & Wardrop, 2001), which consisted of 5 questions. To measure how positive the adolescents' self-evaluation was in accordance with their academic skills "The Academic Self-Evaluation Questionnaire" was used (McCoach, 2002), which consisted of 5 questions.

The study found that the internal coherence of questions of all the questionnaires used in the research after the calculation of Cronbach's alpha coefficients was sufficient or very good and ranged from .655 to .900 (Table 1).

The research data was analysed and calculated using the SPSS program (Statistical Package for the Social Sciences), version 17.0. The arithmetic means and response percentage frequencies of the survey data were calculated. The study data were compared using the Mann-Whitney *U* test, and the percentage frequencies were often compared using χ^2 (chi-square) test. The difference was considered statistically significant when the error probability value was $p \leq .05$. The internal reliability of questionnaires was determined by calculating Cronbach's alpha coefficients.

RESULTS

The survey revealed that the 11–15-year-old boys' attitudes to socioeducational school environment resulted to be better than that of girls. However, it is interesting to note that the significant differences for girls and boys were determined in the evaluation of teachers' help for pupils, where girls appreciated this assistance more ($p < .05$) (Table 2).

It was found that younger adolescents felt more help from the teachers at school than older adolescents ($p < .05$), but they also pointed out that they experienced a stronger sense of loneliness at school than older adolescents ($p < .05$) (Table 3).

A more positive relationship was revealed between adolescent athletes and school ($p < .05$), but adolescent non-athletes had a better attitude to socioeducational school environment (Table 4).

Title of Questionnaire	Gender		*U*	*p*
	Girls	Boys		
	Mean sum	Mean sum		
Teachers' Help for Pupils	18.94	18.04	4055.5	**.052**
Support of Classmates	15.45	15.84	4439.5	.358
Positive Relationship Between Adolescents and School	63.39	61.64	4304.5	.210
Attitude Towards Socioeducational School Environment	33.29	37.40	3990.5	**.041**
Loneliness at School	13.11	13.18	4487.5	.401
Academic Self-Evaluation	27.19	26.71	4713.0	.823

Table 2. **Evaluation of educational school environment and academic self-evaluation with respect to gender**

Title of Questionnaire	Age group		*U*	*p*
	11–12 years	13–15 years		
	Mean sum	Mean sum		
Teachers' Help for Pupils	19.03	17.93	3910.0	**.024**
Support of Classmates	15.68	15.62	4757.0	.910
Positive Relationship Between Adolescents and School	63.67	61.32	4147.5	.099
Attitude Towards Socioeducational School Environment	34.23	36.53	4264.0	.176
Loneliness at School	13.49	12.79	4006.0	**.033**
Academic Self-Evaluation	27.79	26.08	4158.5	.105

Table 3. **Evaluation of educational school environment and academic self-evaluation with respect to age**

Title of Questionnaire	Athletes	Non-athletes	*U*	*p*
	Mean sum	Mean sum		
Teachers' Help for Pupils	18.86	18.12	4234.0	.152
Support of Classmates	15.77	15.53	4514.5	.469
Positive Relationship Between Adolescents and School	64.68	60.42	3697.0	**.005**
Attitude Towards Socioeducational School Environment	33.95	36.73	4049.0	**.051**
Loneliness at School	13.30	13.00	4243.0	.136
Academic Self-Evaluation	27.44	26.47	4320.5	.226

Table 4. **Evaluation of educational school environment and academic self-evaluation with respect to sports**

DISCUSSION

The study revealed that boys had a more positive attitude towards school (attitude to teachers, homework, marks and learning) than girls did. However, in Petrides, Frederickson and Furnham's (2004) study, the opposite tendency was determined: adolescent girls appreciated both the learning process and its achievements as well as the school concept itself more. Similarly, other

studies have seen the same tendency, e.g. Byrne (2000), Bergh and Erling (2005) draw attention to the adolescent girls' greater interest and interest in school learning process. Berenson, Crawford and Cohen's (2005) research suggests that adolescent boys gently respond to the expressed criticism, which directly associates their relationship with others with detachment and avoiding of others. Brettschneider, Kleine, and Klimek (2003) also found that adolescent boys tended to be more irritable, anxious and felt more constrained from their environment than their peer girls. This, perhaps, may be explained by the fact that the studied adolescent girls receive more support from teachers than adolescent boys.

It was found that younger adolescents felt more support from the teachers at school than older adolescents; similar results were also obtained from Moreno and Cervello (2005) and Spring, Rosen, and Matheson's (2002) studies, who recognized that as an adolescent was becoming older, school and school teachers became less meaningful, so mutual relationship tended to weaken. It was determined that younger respondents experienced a stronger sense of loneliness at school than older adolescents. Dam and Volman (2007) indicate that younger adolescents have a few friends from classmates, but during the period of adolescence their peers comprising the major part of their life and becoming a priority the friendship factor become very significant. This friendship capital delays the feeling of loneliness, allows to feel constantly among others and together with others.

It should be emphasized that adolescent athletes feel more belonging and psychologically included in school than their peer adolescent non-athletes. It reflects Folts' (2011) statement that adolescent athletes are bolder than non-athletes, it is likely that they receive a subject teacher's support and response to the challenges during lessons or in task challenges more often. Moreover, adolescent athletes are able to come into contact with the known or unknown persons easier and quicker as compared with adolescent non-athletes. In addition, adolescent athletes get into contact with other adolescents and succeed among them better, they possess a more friendly attitude and initiative to mobilize everybody (Bobrova & Augienė, 2009; Šertvytienė & Laskienė, 2008).

Despite the interesting findings regarding the evaluation of educational school environment and academic self-evaluation of 11–15-year-old adolescent athletes and non-athletes, there were several limitations in the present study. First, the study employed a relatively small sample size, which might account for some of the non-significant findings. The second limitation of the study – results were not compared between athletes and non-athletes in the aspect of gender.

CONCLUSION

It was found that girls felt more teachers' help at school than boys, however, boys evaluated school environment more positively. It was revealed that younger adolescents received more help from teachers at school than older adolescents, however, they experienced a sense of loneliness at school stronger than older adolescents. It turned out that although adolescent non-athletes had a better approach to socioeducational school environment, their peer athletes reported having a better link with school.

The perspective of the study can be a larger sample testing, with special attention paid to the sport factor, in order to ascertain whether the sport factor affects adolescent feelings will school.

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Page 2 should include the **abstract** (250 words) revealing the scientific problem and providing the major data of the research. It must be structured into the following sections: Background. Methods. Results. Conclusion. Keywords (from 3 to 5 informative words and/or phrases).

The full text of the manuscript should begin on page 3. It should be structured as follows:

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Methods. In this part the choice of specific methods of the research should be grounded. The research participants, methods, apparatus and procedures should be identified in sufficient detail. If the methods of the research used are not well known and widely recognized the reasons for the choice of a particular method should be stated. References should be given for all non-standard methods used. Appropriate statistical analysis should be performed based upon the experimental design carried out. It is necessary to indicate the methods of mathematical statistics applied (statistical reliability, statistical power, confidence interval, effect size), and to explain the estimation of the sample size. Information that will identify human subjects must not be included. Research involving human subjects should be carried out following the principles of the Declaration of Helsinki.

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Acknowledgements. On the Acknowledgement Page the authors are required to state all funding sources, and the names of companies, manufacturers, or outside organizations providing technical or equipment support (in case such support had been provided).

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All abbreviations should be explained in parentheses what they stand for on their first occurrence in the text. Non-standard special abbreviations and symbols need only to be defined at first mention. The results of all measurements and symbols for all physical units should be those of the System International (SI) Units. In the text of the article all numbers up to ten are to be written in words and all numbers starting from eleven on – in Arabic figures.

Every **table** should have a short subtitle with a sequential number given above the table (the tables are numbered in the same sequence as that of references given in the text). All explanations should be in the text of the article or in a short note added to the table. The symbols and abbreviations given in the tables should coincide with the ones used in the text. The location of the table should be indicated in the text, e.g. [Insert Table 1 here].

All **figures** are to be numbered consecutively giving the sequential number in Arabic numerals, e.g. Figure 1. The location of the figure should be indicated the text, e.g. [Insert Figure 1 here]. The figures should be presented in open file formats so that they could be edited.

In-text references should be cited as follows: Brown (2011) investigated… or: An investigation (Brown, 1991) found …. References cited in the text with two authors should list both names: Wright and Mander (2002) found...; Reviews of research on sport and reading (Wright & Morgan, 2001) have concluded.... references cited in the text with three, four, or five authors, list all authors at first mention; with subsequent citations, include only the first author's last name followed by et al.: Campbell, Brady, Bradley, and Smithson (1991) found ... (first citation); Campbell et al. (1991) found ... (subsequent citations); (Campbell, Brady, Bradley, & Smithson,1991), (Campbell et al., 1991). References cited in the text with six or more authors should list the first author et al. throughout.

In the reference section, references should be listed in alphabetical order taking account of the first author. First the references in Latin characters are given, then – in Russian (Cyrillic) characters. For works up to seven authors, list all authors. For eight or more authors, list the first six, then ellipses followed by the last author's name. In the case when there are several references of the same author published at the same year, they must be marked by letters, e.g. 2001 a, 2001 b, etc. in the list of references and in the article, too.

Examples:

Books (print and online)

Author, A. A. (year). *Title of work.* Location: Publisher.

Author, A. A. (year). *Title of work.* doi:xx.xxxxxxxxxxxxxxx

Author, A. A. (year). *Title of work*. Retrieved from http://www.xxxxxxxxxx

Author, A. A. (year). *Title of work*. Retrieved from xxxxxxxxxxx database.

Chapter in a book:

Author, A. (year). Title of chapter. In E. Editor (Ed.), *Title of book* (pp. xx–xx). Location: Publisher.

Author, A. (year). Title of chapter. In E. Editor (Ed.), *Title of book* (pp. xx–xx). Retrieved from http://xxxxxxxx

Author, A. (year). Title of chapter. In E. Editor (Ed.), *Title of book* (pp. xx–xx). doi:xxxxxxxxxx

Journal and newspaper articles (print and online)

Author, A. A., Author, B. B., & Author, C. C. (year). Article title. *Journal Title, volume number* (issue number), page numbers.

Author, A. A., Author, B. B., & Author, C. C. (year). Article title. *Journal Title, volume number* (issue number), page numbers. doi:xx.xxxxxxxxxxxxx

Author, A. A., Author, B. B., & Author, C. C. (year). Article title. *Journal Title, volume number* (issue number), page numbers. Retrieved from http://www.xxxxxxxxxxxxxxx

These are the most common examples cited. For a complete list of examples please consult *Publication Manual of the American Psychological Association*, 6th ed.

20-23 June, 2017 – Kaunas, Lithuania
Lithuanian Sports University

2nd Conference of the

World Association for Sport Management

The World Association for Sport Management (WASM) is pleased to announce its second conference to be held in Kaunas, Lithuania hosted by the Lithuanian Sports University. This WASM conference will bring together scholars, practitioners, professionals, and students from around the world to share expertise, knowledge, and new ideas about the global venture of the sport business. The conference theme is a focus on sport business practice, issues, collaboration, networking, management, and marketing of sport business in a global marketplace, which offers a platform for the international exchange of ideas, best practices, and scientific inquires. WASM invites presentations oriented around, but not limited to, the following topics:

- International Understanding about the Global Sport Business Marketplace
- International Relations in the Global Sport Business Marketplace
- Country/regional collaboration in the Global Sport Business Marketplace
- Challenges in the Global Sport Business Marketplace
- Sport Management Education Approaches and the Global Sport Business Industry
- Development of Industry in a Global Sport Business Marketplace
- Culture in a Global Sport Business Marketplace
- Legal systems in a Global Sport Business Marketplace
- Governance and Policy of Sport in the Global Sport Business Marketplace
- Financial Issues in a Global Sport Business Marketplace
- Sport Marketing in a Global Sport Business Marketplace
- Social Media Marketing in a Global Sport Business Marketplace
- Human Diversity and Sport in the Global Sport Business Marketplace
- Participation Sport in a Global Sport Business Marketplace
- The Sporting Goods Industry in the Global Sport Business Marketplace
- Growth of Disability Sport in a Global Sport Business Marketplace
- Sport Tourism and the Global Sport Business Marketplace
- Hospitality and Sport in the Global Sport Business Marketplace
- The Sport Business Management Professor and a Global Sport Business Marketplace
- The Sport Business Management Student and a Global Sport Business Marketplace
- Sport Industry Segments – motor sports, water sports, and all others – in the Global Sport Business Marketplace

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