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Virtual reality and consumer behavior: constraints, negotiation, negotiation-efficacy, and participation in virtual golf

Authors' contribution:
A) conception and design of the study
B) acquisition of data
C) analysis and interpretation of data
D) manuscript preparation
E) obtaining funding

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ABSTRACT

The emergence of virtual sports shows promises in encouraging participation among those who may be constrained from participating in traditional recreational sports (Choi et al., 2019). To maximize virtual sports' potential in increasing sports participation, this study aimed to investigate the relationships between constraints, negotiation, negotiation-efficacy, and participation. Results from virtual golf participants found that, as predicted, (a) constraints had a negative direct influence on participation, (b) negotiation-efficacy had a negative direct influence on constraints, (c) negotiation-efficacy had a positive direct influence on negotiation, and negotiation had a positively direct influence on participation. The findings of this study indicated that reduced constraints did not result in increasing virtual golf consumers' participation because negotiation did not play a significant role in their decision to participate. Thus, the current study provides a comprehensive understanding of interrelationships among leisure participation, constraints, and negotiation, particularly extending to the context of virtual golf.

KEYWORDS

golf, virtual reality, leisure, consumer behavior

Introduction

Advanced technology has altered and benefitted people's lifestyle. Virtual reality is one of the cutting-edge technologies allowing individuals to experience a realistic virtual environment (Lee, Cheon, Judge, Shin, & Kim, 2012) as it turns imagination into reality within computer-based environment. In the sport industry, virtual reality has not only brought about dramatic changes in consumption patterns, but also has generated new types of sports (Young & Pederson, 2010).

Indoor virtual golf, also called "screen golf" has experienced outstanding growth in the Republic of Korea (Jung, Park, Kang, Lee, & Hahn, 2010; Kim, Seo, Kim, & Chang, 2014; Lee, Chung, & Lee, 2013). With the virtual reality created by high-definition golf simulators (Jung et al., 2010), the popularity of this emerging sport-related business has threatened that of outdoor field golf. Participation in the sport is especially strong in East Asia. It is estimated that 200,000 individuals per day play virtual golf in the Republic of Korea, and both Japan and China have seen strong growth in the market (Kerr-Dineen, 2018). In the United States, The National Golf

Physical Culture and Sport. Studies and Research, 2020, 88, 1-10
DOI: 10.2478/pcssr-2020-0020

Foundation (NGF) estimates there are four million virtual golf participants, and that half of them have never played outdoor golf (Schupak, 2018).

In a recent study, Choi, Greenwell, Hums, and Hambrick (2019) found virtual golf decreased levels of consumers' perceived constraints that have long been considered significant in outdoor golf (i.e., cost, weather, time, and skill/confidence), making it easier for individuals to participate. This study seeks to extend the prior work by

a) examining the extent to which constraints predict virtual golf participation and
b) investigating the relationships between constraints, negotiation, negotiation-efficacy, and participation.

Findings from this study provide a theoretical groundwork for better understanding the complex psychological dimensions of virtual sport consumers and suggest a concrete future direction for practitioners in technology-based sport industries.

Literature review

Leisure Constraints

Leisure constraints are defined as factors that may prevent or reduce participation in leisure activities (Jackson, 1988). Since it also referred to as inhibitors (Um & Crompton, 1992) or barriers (Smith, 1987), leisure constraints may not only limit participation but also hinder acquisition of leisure preferences (Crawford & Godbey, 1987) and leisure participation intentions (Iso-Ahola & Mannell, 1985). Crawford and Godbey (1987) found three types of constraints:

a) Intrapersonal barriers (e.g., stress, depression, and anxiety),
b) Interpersonal barriers (e.g., relationship with a spouse, children, or friends), and
c) Structural barriers (e.g., financial resources, lifestyle, season, climate, and work time).

Specific to golf, a variety of constraints such as skill, social, time, and cost have been found to have a negative effect on participation (Jun & Kyle, 2011; Lyu & Lee, 2018). Golfers are likely to choose participation opportunities where they are likely to experience fewer constraints. These constraints may differ according to context, as Choi et al. (2019) found both virtual and outdoor golfers experienced the same level of social and health constraints, while virtual golfers were less constrained by cost, weather, time, and skill/confidence. Given constraints are conceptualized as limiting participation, the first hypothesis posits that higher levels of these six constraints will result in lower virtual golf participation.

H1: Constraints have a negative direct influence on virtual golf participation.

Leisure Constraint Negotiation

Whereas existing research (Crawford & Godbey, 1987; Crawford, Jackson, & Godbey, 1991) defined constraints on leisure participation as insurmountable barriers, Jackson, Crawford, and Godbey (1993) emphasized the "negotiation" process in an individual's participation decision. Jackson et al. (1993) noted (a) when encountering a constraint, people might negotiate the constraint in various ways, (b) the outcome was not necessarily nonparticipation, and (c) participation through a successful negotiation process could be considerably different from participation in the absence of constraints in terms of engagement level, frequency of participation, etc. In the same vein, Scott (1991) described how successful negotiation would be a prerequisite process of leisure involvement, indicating leisure constraints might bring about modified participation rather than nonparticipation.

Until recently, leisure constraints have been discussed as a negotiable factor in individuals' decision-making process (Alexandris & Carroll, 1997; Hawkins, Peng, Hsieh, & Eklund, 1999; Jackson & Dunn, 1991; Jackson & Rucks, 1993), through applying diverse concepts to leisure negotiation process, such as social identities (e.g.,

Physical Culture and Sport. Studies and Research, 2020, 88, 1-10
DOI: 10.2478/pcssr-2020-0020

parent, friend, and others), identity conflict, and identity facilitation (Jun & Kyle, 2011). The findings were consistent with the previous concept of negotiation (Jackson et al., 1993) that participation was dependent on the negotiation process, as they emphasized the importance of negotiation on leisure constraints research. Hubbard and Mannell (2001) proposed that individuals encountering constraints would be both inhibited from participating in the activity and prompted to negotiate the constraint. White (2008) confirmed this relationship finding constraints were positively correlated with negotiation. Negotiation, in turn, increased participation. Therefore, the second and third hypotheses state:

H2: Constraints have a positive direct influence on negotiation in virtual golf.

H3: Negotiation has a positive direct influence on virtual golf participation.

Negotiation-Efficacy

While previous empirical studies (Hubbard & Mannell, 2001; Jackson et al., 1993; Jun & Kyle, 2011) have identified and demonstrated negotiation as one of the significant components in leisure studies, there has been a growing need to further examine the notion of negotiation on a theoretical basis (Henderson, Bedini, Hecht, & Schuler, 1995; Hubbard & Mannell, 2001). A number of researchers have suggested self-efficacy might play a significant role in an individual's negotiation process and might provide more rationales into the existing leisure constraints model (Henderson et al., 1995; Hubbard & Mannell, 2001; Loucks-Atkinson & Mannell, 2007).

Loucks-Atkinson and Mannell (2007) conducted the first study extending the existing leisure constraints framework by applying self-efficacy into the context of leisure constraints. Self-efficacy directly affects an individual's cognitive process, and it leads to motivational behavior for certain expected outcomes and goals. To achieve such goals, an individual tends to make efforts even when facing challenges. Loucks-Atkinson and Mannell (2007) proposed a new concept, "negotiation-efficacy," based upon the concept of self-efficacy. Negotiation-efficacy was defined as "people's confidence in their ability to successfully use negotiation strategies to overcome constraints" (Loucks-Atkinson & Mannell, 2007, p.20), and Loucks-Atkinson and Mannell (2007) asserted negotiation-efficacy works as a mediator, which indirectly influences participation through motivations, constraints, and negotiation. As predicted, higher negotiation-efficacy led to higher motivations, negotiation efforts, and lower perception of constraints, which eventually have indirect positive influences on participation (Ridinger, Funk, Jordan, & Kaplanidou, 2012; White, 2008). This leads to the fourth and fifth hypotheses:

H4: Negotiation-efficacy has a positive direct influence on negotiation in virtual golf.

H5: Negotiation-efficacy has a negative direct influence on constraints in virtual golf.

Methods

Data Collection Procedure

To meet the purpose of this study, the data collection was implemented from people over 20 years old in the Republic of Korea with experience playing virtual golf. Based on the purposive sampling technique, two virtual golf centers in the Republic of Korea were selected. Customers in the virtual golf centers voluntarily participated in an online-based survey pre-created on Qualtrics.com (online survey platform). Specifically, a Uniform Resource Locator (URL) connecting to the Qualtrics.com was sent to all voluntary survey respondents via their mobile phones. Through the URL, participants accessed and completed survey questionnaires of this study. A total of 600 questionnaires were distributed, and after excluding 21 incomplete surveys, 212 out of 233 returned questionnaires (38.8% response rate) were utilized in this study. Data collection procedure lasted for three weeks on January 2017.

Physical Culture and Sport. Studies and Research, 2020, 88, 1-10
DOI: 10.2478/pcssr-2020-0020

Measures

The study utilized (a) leisure constraints, (b) negotiation, (c) negotiation-efficacy, and (d) participation to investigate the relationships among the variables. Each item anchored in 7-point Likert scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree).

Leisure constraints scale. Based on the purpose of this study, the current study modified the leisure constraints scale which were utilized from a research of Jun and Kyle (2011) and developed from a study of Choi (2016). The leisure constraints were measured with 4 factors including 12 items: (a) social (3 items; e.g., "my family/friends have different interests than virtual golf"), (b) skill/confidence (3 items; e.g., "I'm too inexperienced to play virtual golf"), (c) cost (3 items; e.g., "I don't have enough money to play virtual golf"), and (d) time (3 items; e.g., "I have no time to play virtual golf").

Negotiation scale. This study applied the negotiation scale utilized from a study of Jun and Kyle (2011). This instrument comprised 4 factors with 12 items: (a) social (3 items; e.g., "I try to persuade close people to play virtual golf"), (b) skill/confidence (3 items; e.g., "I try to play more virtual golf to get better"), (c) cost (3 items; e.g., "I buy inexpensive equipment for virtual golf"), and (d) time (3 items; e.g., "I try to play virtual golf whenever possible").

Negotiation-efficacy. The survey also measured negotiation-efficacy of virtual golf consumers. Following the standard of White (2008), respondents were asked to rate their confidence in the successful use of specific negotiation resources to cope with leisure constraints (3 items; e.g., "I enjoy overcoming obstacles to virtual golf participation").

Participation. Participation level was measured through a question asking the participation frequency playing virtual golf in a month prior to the survey (i.e., How many times did you play virtual golf in a month recently?)

Validity and Reliability

Exploratory factor analysis (EFA) using a principal component analysis (PCA) with orthogonal rotation (Varimax) was performed to determine the underlying factor structure for virtual golf consumers' leisure constraints and negotiation. To decide on how many components to retain, three criteria were applied: (a) Eigenvalue greater than 1.0, (b) parallel analysis, and (c) the amount of total variance explained by factors (greater than 70%; Stevens, 2009). The negotiation-efficacy and participation consisting of one single factor each were excluded from this analysis. Also, Cronbach's alphas were utilized to confirm the internal reliability consistency. Lastly, to test a hypothesized measurement model of this study, Confirmatory factor analysis was performed based on comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square residual (RMR), and root mean square error of approximation (RMSEA).

Data Analysis

Structural equation modeling (SEM) using the Statistical Package for the Social Sciences (SPSS) and analysis of a moment structures (AMOS) 22 was conducted to test measurement model and the structural model in the current research investigating consumer behaviors of virtual golf (i.e., leisure constraints, negotiation, negotiation-efficacy, and participation).

Results

Frequency Distribution of Variables

The subjects consisted of 189 (89.2%) males and 23 (10.8%) females, which closely reflects the virtual golf population in the Republic of Korea found in previous research where nearly 70% of total participants were

male (Han, Baek, Lee, & Huh, 2014; Lee et al., 2012). In terms of age, 75.9% (n = 161) of the sample was between the ages of 30 and 39 years old. In regard to marital status, 96 (45.3%) were single, 116 (54.7%) were married. In relation to participants' highest level of education completed, a majority of survey participants had a bachelor's degree (n = 137, 64.6%), followed by a master's degree (n = 53, 25.0%), a high school degree (n = 6, 2.8%), and a doctorate degree (n = 16, 7.5%). In regard to average scores in virtual golf, participants reporting between 83 and 97 comprised 36.3% of the total sample (n = 77), followed by greater than 97, less than 83 (n = 48, 22.6%), and "I don't know"(n = 22, 10.4%).

Exploratory Factor Analysis

Leisure constraints. The Kaiser Meyer-Olkin (KMO) measure verified the sample adequacy for the analysis (KMO = .74), exceeding the criteria (.70; Field, 2009). Bartlett's test of sphericity (χ^2 = 1502.77, *df* = 66, p < .001) was statistically significant. The extracted communalities were generated to reflect the proportion of variance explained by the retained factors, and the values ranged from .71 to .92, exceeding the criteria (.40) (Stevens, 2009). Based on the factor loading of .50 as a cutoff point, 4 factors with 12 items in leisure constraints were retained (Table 1).

Table 1. Factor structure matrix for leisure constraints in virtual golf

Constraints items	1	2	3	4	h^2
Skill/Confidence1	.92				.88
Skill/Confidence2	.91				.85
Skill/Confidence3	.81				.71
Cost 1		.89			.89
Cost 2		.89			.89
Cost 3		.82			.69
Time1			.87		.81
Time 2			.87		.79
Time 3			.75		.60
Social 1				.89	.80
Social 2				.83	.74
Social 3				.71	.59
Eigenvalues	4.16	1.84	1.64	1.62	
% of Variance	34.67	15.3	13.63	13.47	
Cronbach's alphas	.89	.85	.81	.89	

Note. 1 = Skill/Confidence, 2 = Cost, 3 = Time, 4 = Social; h^2 = communalities.
Source: own study.

Negotiation. The KMO measure verified the sample adequacy for the analysis (KMO = .79), exceeding the criteria (.70; Field, 2009). Bartlett's test of sphericity (χ^2 = 1448.52, *df* = 66, p < .001) was statistically significant. The extracted communalities were generated to reflect the proportion of variance explained by the retained factors, and the values ranged from .63 to .93, exceeding the criteria (.40; Stevens, 2009). Based on the factor loading of .50 as a cutoff point, 4 factors with 12 items in negotiation were retained (Table 2).

Scale Reliability

Cronbach's alphas reported acceptable internal consistency for reliability (greater than .70; Nunnally & Bernstein, 1994): Constraints (Skill/Confidence, α = .89; Cost, α = .85; Time, α = .81; Social, α = .89), Negotiation (Time, α = .90; Skill/Confidence, α = .85; Social, α = .84; Cost, α = .75), and Negotiation-efficacy (α = .86).

Table 2. Factor structure matrix for negotiation in virtual golf

Negotiation items	1	2	3	4	h^2
Time1	.88				.83
Time2	.88				.83
Time3	.88				.83
Skill/Confidence 1		.90			.85
Skill/Confidence 2		.87			.79
Skill/Confidence 3		.71			.72
Social 1			.93		.89
Social 2			.92		.87
Social 3			.63		.65
Cost 1				.84	.76
Cost 2				.78	.76
Cost 3				.63	.66
Eigenvalues	4.75	2.02	1.63	1.03	
% of Variance	39.55	16.86	13.61	8.61	
Cronbach's alphas	.90	.85	.84	.75	

Note. 1 = Time, 2 = Skill/Confidence, 3 = Social, 4 = Cost; h^2 = communalities.
Source: own study.

Structural Equation Model

Measurement model. The measurement model using a confirmatory factor analysis (CFA) showed an acceptable model fit to the data (χ^2 = 722.37, *df* = 34, $p < 0.01$, NFI = .82, CFI = .89, RMSEA = .07). Given that values of NFI above .80 (Hooper, Coughlan, & Mullen, 2008), CFI above .80 (Hu & Bentler, 1998), and RMSEA of .08 or less (Browne & Cudeck, 1993) were considered adequate, the measurement model to the data was acceptable.

Structural model. Leisure constraints, negotiation, and negotiation-efficacy were exogenous variables (independent variable), and participation in virtual golf was an endogenous variable (dependent variable). The structure model on SEM revealed an acceptable model fit to the data (χ^2 = 724.14, *df* = 34, $p < 0.01$, NFI = .82, CFI = .89, RMSEA = .07), following the statistical standard that values of NFI above .80 (Hooper et al., 2008), CFI above .80 (Hu & Bentler, 1998) and RMSEA of .08 or less (Browne & Cudeck, 1993) were considered adequate. Four standardized path coefficients were statistically significant: (a) Constraints to participation (β = -.42), (b) negotiation to participation (β = .32), (c) negotiation-efficacy to negotiation (β = .60), and (d) negotiation-efficacy to constraints (β = -.37). The standardized path coefficient was not statistically significant for constraints to negotiation (β = .17) (Figure 1).

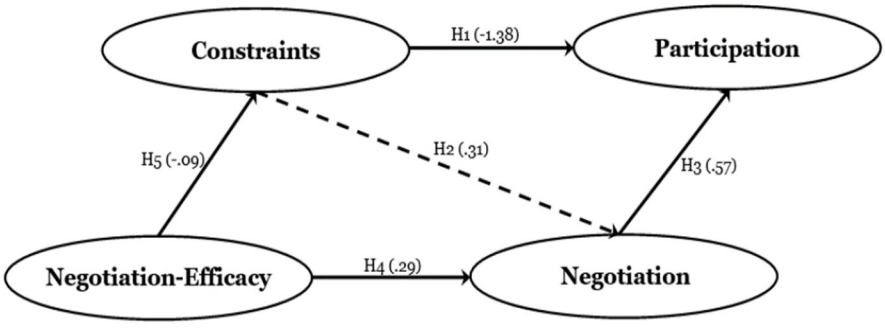

Figure 1. Structural model of constraints, negotiation, negotiation-efficacy, and participation in virtual golf
Source: own study.

Physical Culture and Sport. Studies and Research, 2020, 88, 1-10
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Discussion

Indoor virtual golf (i.e., screen golf) became one of the popular sport entertainment options in the Republic of Korea by satisfying demands of consumers who have experienced restrictions (e.g., weather, cost, and time) in enjoying outdoor golf. The trend has shown the potential of virtual golf for becoming an alternative to outdoor golf as well as an autonomous sport genre. Furthermore, previous research revealed new technology contributes in reducing some of the constraints associated with outdoor golf (Choi et al., 2019). However, no additional efforts have been made to examine the positive influence of those reduced constraints with negotiation process on virtual golf consumers' participation. Therefore, this study examined the extent to which constraints predict virtual golf participation and the role of negotiation in the relationship between constraints and participation.

In regard to the first research question (RQ1: Are the constraints of social, skill/confidence, cost, and time significant predictors of participation in virtual golf?), results showed skill/confidence and time significantly accounted for participation. Contrary to the findings from a previous study (White, 2008), it was found both an intrapersonal constraint (skill/confidence) and a structural constraint (time) were the most significant constraints for participating in virtual golf. In addition, this result was not consistent with Crawford et al. (1991) that found structural constraint was more significant than any other constraints.

In terms of skill/confidence, virtual golf consumers may experience intrapersonal constraints (Mullin, Hardy, & Sutton, 2014) derived from the common perception that golf is difficult to learn, as virtual golf necessitates physical movement and the same skillsets required in outdoor golf. While some consumers tend to perceive skill/confidence as a major constraint due to the involvement of physical activity and the difficulty of the sport in nature, physical activity does not necessarily constrain the existing golf consumers to participate in virtual golf because neither consumer of outdoor golf nor virtual golf expect the difficulty of the sport is reduced.

On the other hand, virtual golf consumers perceive time as one of the constraints to participation. Virtual golf enables consumers to take less time in total than the time taken for playing outdoor golf by saving time in preparation and transportation. However, virtual golf consumers may still have to spend quite a long time to complete a course and perceive it is too long to participate in. It would be interesting to see if virtual golf consumers feel differently when comparing to outdoor golf in terms of total time spent to complete a single golf course. Yet, the result of the study alerts practitioners to be aware of the time constraint, thus, they need to develop time-shortened virtual golf programs to keep the existing virtual golf consumers and to attract more new participants.

Lastly, it is noteworthy that cost was not a significant constraint for participation. Cost has been known as one of the significant constraints for participation in various leisure activities, particularly in golf industry in Republic of Korea. On the other hand, considering that reduced cost has been a major advantage to play virtual golf rather than outdoor golf, the result of this study confirmed that virtual golf industry has been effectively attracting people to participate in virtual golf.

In terms of the second research question (RQ2: How the negotiation process works in virtual golf?), results showed virtual golf participation had a negative relationship with constraints and a positive relationship with negotiation, supporting the hypotheses 1 (H1: Constraints have a negative direct influence on virtual golf participation.) and 3 (H3: Negotiation has a positive direct influence on virtual golf participation.). In addition, negotiation-efficacy had a positive relationship with negotiation and a negative relationship with constraints, which supported the hypotheses 4 (H4: Negotiation-efficacy has a positive direct influence on negotiation in virtual golf.) and 5 (H5: Negotiation-efficacy has a negative direct influence on constraints in virtual golf.). However, contrary to expectations, hypothesis 2 (H2: Constraints have a positive direct influence on negotiation in virtual golf.) was not supported, as constraints did not have a meaningful relationship with negotiation.

This result was opposed to the expectation that reduced constraints would positively influence participation through negotiation process. Regardless of negotiation effort, reduced constraints directly led to increased

Physical Culture and Sport. Studies and Research, 2020, 88, 1-10
DOI: 10.2478/pcssr-2020-0020

participation, thus, it has been confirmed that consumers decide to participate in virtual golf based on the existence or absence of leisure constraints. Therefore, this result was contrary to the finding of Jackson et al. (1993) that people are more likely to negotiate perceived leisure constraints when confronting one. The result of the current study indicated that perceived constraints have an impact on non-participation without negotiation. This does not necessarily implicate that those constraints are insurmountable to the consumers but highlights the importance of constraints to predict participation. To increase virtual golf participation, it is more important to eliminate each constraint than negotiate or overcome those perceived constraints. This result supported Dishman (1994) stating that more than half of participants last their sport activities no longer than six months and each individual's varying circumstantial constraints are the primary reasons to quit. Therefore, most importantly, this result suggests practitioners to find a way to eliminate or reduce constraints of skill/confidence and time to increase virtual golf participation.

Conclusions

This study provides a comprehensive understanding of interrelationships among leisure participation, constraints, and negotiation, particularly extending to the context of virtual golf. Especially, the findings of this study extend the existing knowledge on an individual's decision-making process in participating in leisure activities by confirming the difference between traditional leisure context and technology-based leisure activity. In other words, constraints are still a significant factor in decision-making process, and negotiation process is not a significant factor for virtual golf consumers' participation. Contrarily, the tendency of making decision in participating in virtual golf without negotiation process was identified.

Also, this study provides support for including negotiation-efficacy as a significant factor to examine an individual's participation and constraint to leisure activities, as Loucks-Atkinson and Mannell (2007) and White (2008) suggested the modification of seventh proposition of Jackson et al. (1993) that "The greater people's confidence in the successful use of negotiation resources to cope with constraints, the greater the motivations, the greater the effort to negotiate, the lesser the perception of constraints, and the higher the level of participation" (p. 356).

Limitations and Directions for Future Research

There are several limitations that ought to be improved in the future research in order to further develop the structural model of leisure constraints and negotiation in virtual golf. First, the sample was comprised of virtual golf participants in the Republic of Korea since it is the leading country of virtual golf. However, as numbers of virtual golf facilities in other countries/locations are growing, which allows golfers to have different experiences, it warrants identifying the relationship among constraints, negotiation, negotiation-efficacy, and participation of different target population (e.g., different nationalities, virtual golf participants only, and outdoor golf participants only) since diverse target population might share varying factors.

Second, gender of consumers in virtual golf is another realm that needs more investigation. A good amount of studies and statistics indicated the increased number of virtual golf participants in the Republic of Korea. However, women's participation in virtual golf has been fairly stagnating compared to men's participation, which is also consistent with the participation rate in outdoor golf. This gender-lopsided participation in virtual golf needs to be scrutinized based on our holistic understanding of leisure constraints structure and interrelationships among core variables we mentioned in this study. Especially, negotiation-efficacy might play a key role in explicating women's lack of participation in virtual golf.

Finally, future research should examine types of strategies people use to overcome perceived constraints. Our findings systematically demonstrated the interrelationships among constraints, negotiation effort, negotiation-efficacy, and participation and successfully stretched into a new type of leisure. However, despite the emphasis

on the role of negotiation efforts and negotiation-efficacy in virtual golf participation, the study design by nature did not allow to identify what consumers essentially do to deal with or overcome perceived constraints. Previous studies have suggested several negotiation strategies, which are rather broad and general (Jackson & Rucks, 1995). Regarding specific conditions and unique characteristics of virtual golf, an extra effort needs to be made in order to appropriately comprehend negotiation strategies in virtual golf context. Specifically, qualitative approach would be helpful to explore negotiation strategies of virtual golf consumers, and it can be analyzed by considering three distinct levels of constraints including individual, interpersonal, and organizational factors.

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Participating in sports and practicing a religion are related to levels of happiness

Authors' contribution:
A) conception and design of the study
B) acquisition of data
C) analysis and interpretation of data
D) manuscript preparation
E) obtaining funding

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ABSTRACT

The objective of this study was to ascertain whether happiness varies depending on sports participation and religious practice. The sample comprised 2,378 participants aged between 18 and 92 years. All analysis were carried out by testing the interaction effects of the variables of sex and age on sports participation, religious practice, and happiness. We found a high average level of happiness (M = 7.299, range 0–10). However, people who do not participate in sports or practice a religion indicated a level of happiness (M = 6.979) that was statistically lower than that of the other groups: people who practice a religion but do not participate in sports (M = 7.135); people who participate in sports but do not practice a religion (M = 7.478); and people who both participate in sports and practice a religion (M = 7.717). We conclude that happiness is associated with sports participation and religious practice, although with small or very small effect sizes (all $p < 0.050$; η^2_p between 0.008 and 0.020).

KEYWORDS

Social science applied to sport, spirituality, well-being.

Introduction

Happiness has been an object of reflection since at least the origins of philosophy in ancient Greece, and it is a classic theme of inspiration for music, painting, poetry, and art in general (McMahon, 2006). At present, happiness is the object of an exponentially increasing body of scientific study, though a great difficulty that emerges when studying happiness from a scientific perspective is the variation in its meaning across historical contexts and cultures (Oishi, Graham, Kesebir & Galinha, 2013). In any case, it is known that 40 percent of the variance of happiness is associated with factors related to people's will and learning; some researchers interpret this finding as representing an opportunity for people to be happier through an awareness of suitable strategies (Lyubomirsky, 2008).

The exercise and sports sciences have also taken an interest in research into happiness, and there are several studies that have shown the association between happiness and sports participation (Balish, Conacher & Dithurbide, 2016; Downward & Rasciute, 2011; Huang & Humphreys, 2012). At the same time, disciplines other than the sport sciences have also demonstrated that there exists an association between happiness and religious practice (Abdel-Khalek, 2006; Rizvi & Hossain, 2017; Tay, Li, Myers & Diener, 2014), though some studies question the consistency of this association (Lewis & Cruise, 2006).

Physical Culture and Sport. Studies and Research, 2020, 88, 11-17
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In addition, several authors have postulated that although sports and religiosity are different forms of human expression, they share common elements – for example, the existence of group identity, flow, the presence of rituals and mythology, a commitment to improvement, collective practice, and social gathering (Deardorff, White & Smith, 2008; Hoffman, 2010; Magdalinski & Chandler, 2002; Parry, 2007; Parry, Nesti & Watson 2011; Roychowdhury, 2019; Watson & Parker, 2014). It therefore seems reasonable to design a study that addresses the association between happiness, sports participation and religious practice, on both separate and combined bases.

The objective of this study was to ascertain whether the happiness that people feel varies depending on whether they participate in sports, practice a religion, pursue both activities, or do neither.

Methodology

Sample size

This research analyzed the results of a survey (study number 3,029) conducted by the Spanish Centre for Sociological Research (Centro de Investigaciones Sociológicas, CIS). This survey was selected because it is the only one carried out by the CIS that contains questions about sports participation, religious practice, and happiness. A total of 2,485 face-to-face interviews were conducted in participants' homes. According to the technical details of the survey, the sampling error was 2% (assumption of simple random sampling and confidence level of 95.5%). For the purposes of the present study, we selected sampling units with complete data for all the variables mentioned in the following section. The final sample contained a total of 2,378 people, all of them residing in Spain (European Union); their ages ranged from 18 to 92 years. The CIS provided and authorized the use of the data for the present study.

Variables

Six variables were analyzed:

1) Sex: male; female.
2) Age in years: 18-30; 31-50; 51-70; 71 or over.
3) Sports participation: does not participate in sports; participates in sports.
4) Religious practice: does not practice a religion (non-believers, atheists, or believers who almost never attend mass or religious services); practices a religion (Catholics or believers of another religion who attend religious services several times a year or more).
5) Combined variable of sports participation and religious practice: neither participates in sports nor practices a religion; practices a religion but does not participate in sports; participates in sports but does not practice a religion; participates in sports and practices a religion.
6) Happiness: Likert-type scale in which 0 is "completely unhappy" and 10 is "completely happy."

Statistical analysis

We deployed frequency analysis (*N*), percentages (*%*), arithmetic means (*M*), standard deviations (*SD*), Chi-squared (χ^2) tests, T test for independent samples (*T*), and an ANOVA (*F*) to examine the data. To analyze the relationships between happiness and sports participation and religious practice, we first used point biserial correlation (r_{bp}) and then ANCOVA, comparing the main effects with Bonferroni adjustment and testing the interaction effects of the variables of sex and age on the rest of the variables. When statistically significant differences were found, we estimated the effect size via the partial eta-squared parameter (η^2_p), using the following cut-off points: small effect (0.010), medium effect (0.060), large effect (0.160). Calculations were

Physical Culture and Sport. Studies and Research, 2020, 88, 11-17
DOI: 10.2478/pcssr-2020-0021

carried out with the help of SPSS version 25 (IBM Corporation, USA). The confidence level established was 95% ($p < 0.050$).

Results

Table 1 contains the data on sports participation, religious practice, and happiness. In terms of sports participation, the percentage of men who participate in sports (48%) is greater than the percentage of women who do so (32%), and the percentage of the population that participates in sports decreases with age (18–30 = 61%; 31–50 = 47%; 51–70 = 29%; 71 or over = 12%). Regarding religious practice, the percentage of women who practice a religion (36%) is greater than the percentage of men who do so (22%), and the percentage of people who practice a religion increases with age (18–30 = 16%; 31–50 = 21%; 51–70 = 36%; 71 or over = 56%). As for happiness, both men and women reported high and statistically equal levels of happiness (7.275 and 7.185, respectively), and it can be observed that although happiness remains at high levels for all ages, it decreases with age (18–30 = 7.624; 31–50 = 7.259; 51–70 = 7.079; 71 or over = 6.920).

Table 1. Descriptive statistics for sports participation, religious practice, and happiness

Variables	*N*	Sports participation			Religious practice			Happiness		
		No %	Yes %	*p*	No %	Yes %	*p*	*M*	*SD*	*p*
Sex										
Male	1.157	52	48	< 0.001	78	22	< 0.001	7.275	1.806	0.204
Female	1.221	68	32	(χ^2)	64	36	(χ^2)	7.185	1.825	(*T*)
Age (years)										
18-30	429	39	61		83	16		7.624	1.622	
31-50	945	53	47	< 0.001	79	21	< 0.001	7.259	1.821	< 0.001
51-70	701	71	29	(χ^2)	64	36	(χ^2)	7.079	1.811	(*F*)
> 71	303	88	12		44	56		6.920	1.972	

Note: p = probability value for statistical significance, χ^2 = Chi-squared test, T = T test for independent samples, F = ANOVA.
Source: own study.

Table 2 shows the relationship between sports participation, religious practice, and happiness. A positive but weak association between sports participation and happiness can be observed for both men ($r_{pb} = 0.134$) and women ($r_{pb} = 0.128$). We also observed a positive association between religious practice and happiness, but only in the case of men, and the association was very weak ($r_{pb} = 0.084$).

Table 2 Correlation between sports participation, religious practice, and happiness

	Sports participation (no = 0, yes = 1)		Religious practice (no = 0, yes = 1)	
	Men	Women	Men	Women
Happiness (0–10 scale)	0.134**	0.128**	0.084**	0.014

Note: The point biserial correlation coefficients are shown in the cells. **< 0.010.
Source: own study.

Table 3 presents the results on happiness according to sports participation and religious practice. There was a high level of happiness for the total sample ($M = 7.229$). By conducting an ANCOVA, and having tested the interaction effects of the variables of sex and age on the variable of sports participation, we observed that there was a greater level of happiness among people who participate in sports ($M = 7.528$) compared to those who do not ($M = 7.033$), with a small effect size ($F = 22.85$, $df = 3$, $p < 0.001$, $\eta^2_p = 0.010$). Regarding religious practice,

Physical Culture and Sport. Studies and Research, 2020, 88, 11-17
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we found a higher level of happiness among those who practice a religion ($M = 7.300$) compared to those who do not ($M = 7.200$), with a very small effect size ($F = 11.35$, $df = 1$, $p = 0.001$, $\eta^2_p = 0.005$). In the same vein, in terms of the combined variable of sports participation and religious practice, statistically significant differences were also found, with a small effect size ($F = 11.90$, $df = 3$, $p < 0.001$, $\eta^2_p = 0.015$).

Table 3. Association between sports participation, religious practice, and happiness

Variables	Happiness			
	M	*SD*	*P*	η^2_p
Sample total	7.229	1.815	—	—
Sports participation				
No	7.033	1.947	< 0.001	0.010
Yes	7.528	1.547		
Religious practice				
No	7.200	1.795	0.001	0.005
Yes	7.300	1.864		
Sports participation and religious practice				
Neither participates in sports nor practices a religion	6.979	1.940	< 0.001	0.015
Practices a religion but does not participate in sports	7.135	1.957		
Participates in sports but does not practice a religion	7.478	1.549		
Participates in sports and practices a religion	7.717	1.532		

Note: *M* = arithmetic mean, *SD* = standard deviation, *P* = probability of statistical significance, η^2_p = partial eta-squared effect size. ANCOVA with adjustment for the variables of sex and age.
Source: own study.

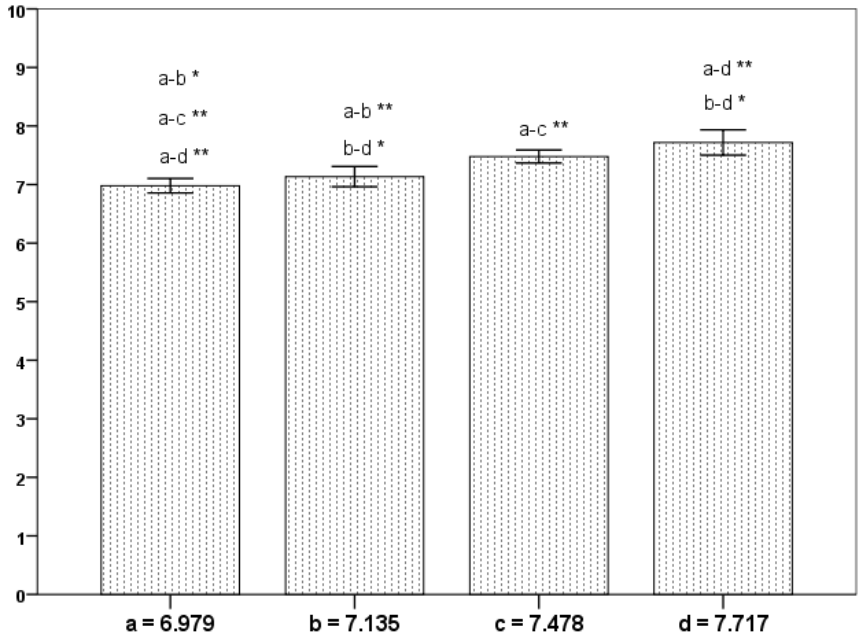

Figure 1. Bar chart of the relationship between happiness and the various groups for combinations of sports participation and religious practice
Notes: appearing next to a, b, c, and d is the arithmetic mean for happiness corresponding to the different groups: a = the group that neither participates in sports nor practices a religion; b = the group that practices a religion but does not participate in sports; c = the group that participates in sports but does not practice a religion; d = the group that participates in sports and practices a religion. Symbols: * probability of statistical significance < 0.050; ** probability of statistical significance < 0.010; error bars represent confidence intervals at 95%. ANCOVA with adjustment for the variables of sex and age.
Source: own study.

Physical Culture and Sport. Studies and Research, 2020, 88, 11-17
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Discussion and conclusions

The study was designed with the aim of ascertaining whether happiness varies depending on sports participation, religious practice, or both practices together. Our main conclusion is that happiness increases with sports participation and religious practice, both separately and in combination. However, it must be borne in mind that the association between happiness and sports participation corresponds to a small effect size, and that between happiness and religious practice to a very small effect size.

In any case, it can be observed that the cohort that neither participates in sports nor practices a religion indicated a lower level of happiness than did the rest of the cohorts. By the same token, people who participate in sports and practice a religion declared the highest happiness levels, though there is no statistically significant difference between this group and the group that participates in sports but does not practice a religion, which shows that the relationship between happiness and sports participation is stronger than the relationship between happiness and religious practice. This result is similar to the findings of Balish, Conacher, and Dithurbide (2016), who state that the association between happiness and being an active member of a sports or leisure organization (*OR* = 1.38) is greater than the association between happiness and being a member of a religion (*OR* = 1.26).

One possible strength of this study is in its use of the only CIS survey that includes questions about sports participation, religious practice, and happiness. This is a positive attribute because, in addition to the fact that the CIS study contains information on the three variables, said study benefits from the methodological rigor and the quality of CIS surveys, in terms of both sample size and the data-collection procedure used, namely a survey administered via face-to-face interviews. However, we must point out that although the survey-based design makes it possible to identify associations, it does not allow causal conclusions to be drawn. So, this paper shows correlations that they are not enough to imply causality.

Moreover, although the data from this study are valid, they must be treated with caution due to the limited reliability of the measurements of the different variables. For example, rather than measuring sports participation in a basic and dichotomous way, it would be desirable to measure physical activity and sports (Dishman, Washburn & Schoeller 2001). Likewise, a more comprehensive instrument that discriminates between spirituality and religiosity could be used (King & Crowther 2004), and happiness could be measured with an instrument that involves more than a single question (Helm, 2000).

In view of the results obtained, and despite the limitations set forth above, a question arises: Why are sports participation and religious practice associated with greater happiness, even though the effect size is small or very small? The literature that takes happiness as its scientific object allows us to affirm that happiness is positively associated with social relations and the feeling of belonging to a group (Lyubomirsky, 2008); both sports participation and religious practice are conducive to this social facilitation of happiness (Balish, Conacher &Dithurbide, 2016). Furthermore, happiness is also positively associated with perceptions of physical well-being and self-esteem (Lyubomirsky, 2008), and thus it is possible that this is the value of sports participation.

In any case, future research should analyze variables that this study did not. For example: there are many kinds of sports, many different approaches to practicing sports (how often and how intense, individual or group sports, etc.) and many different kinds of religions (with different teaching, morality, etc.) and with different approaches to practicing it (ceremonies, collective prayer, individual meditation, social activities and so on). Besides, sports participation and religion practice are two activities of engagement but there are other factors belonging to commitment experiences, such as: membership in clubs, involvement in hobbies, participation in service organizations, that they may be factors correlate with happiness. Needless to say, this very study could (ought to?) be replicated with recent data and adding new variables.

Ethics approval and informed consent

The study was approved by the Research Ethics Committee of the Autonomous University of Madrid (CEI 48-915).

Competing interests

There is no conflict of interest in this study.

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The effect of an interdisciplinary Greek traditional dance programme on Middle School students' goal orientation and anxiety

Authors' contribution:
A) conception and design of the study
B) acquisition of data
C) analysis and interpretation of data
D) manuscript preparation
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ABSTRACT

The aim of the study was to investigate the effect of an interdisciplinary program of Greek folk dance, with topics from history and geography on Middle School students' goal orientation and anxiety level. The sample consisted of 260 students (134 boys & 126 girls). The experimental group (n=144) followed the interdisciplinary four-week program (two lessons per week) while the control group (n=126) followed the corresponding typical physical education program. For the data collection, the questionnaire used was the "Goal orientation" by Papaioannou, Milosis, Kosmidou, and Tsiggilis (2002) and the Greek version (Kakkos & Zervas, 1996) of "Competitive State Anxiety Inventory-2" (Martens et al., 1990). The students filled in the questionnaires before and after their participating in each program. Descriptive statistics, reliability analysis, and Repeated Measures ANOVA were used. Results showed that a. Cronbach's alpha was satisfactory. b. The experimental group decreased significantly the levels of "ego- strengthening" and "ego-protection", and on the contrary significantly increase the "personal development", and "social acceptance". c. Experimental group's boys and girls decreased their "ego- strengthening" and "ego-protection", and enhanced their "personal development" and "social acceptance" more than their control group peers. d. The experimental group decreased the levels of somatic and cognitive anxieties and increased significantly their self-confidence. e. male students increased their self-confidence more than female students. These findings support the view that an interdisciplinary program of traditional Greek dance with issues from history and geography enable us to reduce the rates of ego-strengthening, ego-protection, somatic and cognitive anxiety while simultaneously increases students' personal development, social acceptance, and self-confidence

KEYWORDS

Interdisciplinarity approach, secondary students, Physical Education classes

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Introduction

One of the subjects included in the educational systems of most countries is dance. Dance holds this position as it affects the social, emotional, and intellectual development of a person. Despite its significant impact, though, dance has taken far too long to evolve as a separate scientific field. This delay is attributed, on the one hand, to the ephemeral nature of the dance performance and its complexity and, as well, an ongoing controversy as to whether dance is art or science. This argument has also slowed the development of its teaching with the existence of two views on the issue of whether dance is art or science. The kind of dance considered is an additional factor that increases this fundamental controversy. More specifically, when it comes to folk dance, the argument deepens, given the introduction of another parameter: the expression of the culture of a people through dance (Bourdieu, 1994).

Discussions on the nature of dance, and particularly of folk dance, have resulted in the formation of two approaches regarding its instruction. The first of them isolates dance from its natural surroundings, i.e. the various occasions for the activity itself, be it a religious celebration or social event; it also considers dance as a solely kinetic creation of high complexity and organization, demanding technique and highly accurate performance. Supporters of this view take for granted the adoption of a teacher-centered instruction, as they believe that, only with this method, can high accuracy in the execution of movement and technique be achieved (Serbezis, 1999).

The second teaching approach looks upon folk dance as an element of culture and, as a result, as a social practice consisting of controlled and culturally-dictated body movements are belonging to specific spatiotemporal contexts. In fact, this view considers the interdisciplinary approach to teaching folk dance as the most suitable pedagogical method since, through it, folk dance is dealt with as a whole, i.e. not only as a cultural product but also as a kinetic skill. Additionally, it enables the teacher to use a broad range of tunes and songs for each dance, promoting the development of the musical skills of students as well (Papaioannidou, Derri, & Filippou, 2015; Pitsi, Diggelidis, & Filippou, 2013; Stivaktaki, Mountakis, & Bournelli, 2010).

The interdisciplinary approach has risen in the modern curriculum as an important and challenging technique. Specifically, Bammer (2010, 2013) suggests that this field, which calls ‘integration and implementation’, has become increasingly important in recent years. This field includes most of the terms and the issues normally grouped under the heading of interdisciplinary education; synthesizing more than one discipline and creating groups of teachers and students that enrich the overall educational experience. The integrated approach in teaching differentiated from the traditional way of teaching as for the content but also as for the methods (Kaittani, Derri, & Kioumourtzoglou, 2016).

The last years aiming at the reform of quality of education, integration approach or inderdisclipinary, constituted the central axis in the syntax of the curriculum from the Pedagogic Institute in Greece. The cross-thematic integration refers to the integration of two or more subject areas with the goal of fostering enhanced learning in each area. It is supported that the integrated approach in teaching leads to holistic and real knowledge, which connects with the reality, turn to advantage in the daily life (Ivanitskaya, Clark, Montgomery, & Primeau, 2002).

Research studies, although few, attempted to integrate physical education classes with various curriculum subjects and to examine the effects of such programs. Derri, Aggelousis and Petraki (2004) showed the effectiveness of a health-related fitness and nutrition education program on elementary students’ fitness components and dietary habits. Similar were the results in the study conducted by Zervou, Derri and Paterakis (2004). They found that fourth grade students who were taught topics related to the ancient Olympic Games, through an interdisciplinary movement approach they both acquired and maintained good knowledge compared to their classmates, who were taught the same subject but in a theoretical framework in the classroom. Milosis and Papaioannou (2005) unified themes from the Greek language and physical education in a six-month project. Their aim was to investigate the impact of the project on various aspects such as how students approached their objectives, how strong their motivation was, the satisfaction received from the different classes and the feeling

Physical Culture and Sport. Studies and Research, 2020, 88, 18-30
DOI: 10.2478/pcssr-2020-0022

that they succeeded in coping with difficult tasks. In addition, self-concept, personal and social responsibility and academic achievement were some more of the project's aspects that were investigated. The survey findings revealed positive effects on all the studied aspects. Similarly, the positive impact of an interdisciplinary physical education and Greek language program on language learning of preschool students was found in the study by Derri, Kourtessis, Goti-Douma, and Kyrgiridis (2010). According to researchers, interdisciplinary teaching offers more appealing classes for students (Cone, Werner, Cone, & Woods, 1998); motivation for active participation thereby increases, as emphasis is placed on the value of effort, learning, and personal development as opposed to mere rewards (Ames, 1992; Duda, 1996). The existence of goals on the part of students is an essential condition for them to remain motivated.

Scientific studies in physical education classes have shown that motivation affects students' engagement and their behaviors (Chen, 2001). Specifically, the achievement goals perspective (Ames, 1984; 1992a; 1992b; Nicholls, 1984; Ntoumanis, & Biddle, 1999) has been shown to be one of the theoretical models that have contributed to the understanding of cognitive, emotional and behavioral patterns relevant to a student's achievement in physical education classes (Duda, 1996, 2001; Papaioannou, 1995; 1998b; Treasure, & Roberts, 2001; Xiang, & Lee, 2002). In Greece various researches (Digelidis, & Papaioannou, 1999; Papaioannou, 1997) indicated that children in elementary school appear to be more task orientated in PE classes and as they grow and move from elementary to secondary and senior high school, they lose their motivation, become more ego-orientated and as a result they feel less competent and do not participate in classes. Diggelidis and Papaioannou (2004) confirmed that the students of their research, aged 10 to 17, enjoyed less during the PE lessons and supported that there may be considerable deficiencies in the current PE school programs, which should be more attractive and interesting, proposing new challenging skills.

The demanding school curriculum (Filippou, Rokka, & Mavridis, 2016), excessive school homework, the effort to achieve a high school performance along with insecurity for the future constitute the main sources of stress that students experience (Isralowitz, & Hong, 1990). Stressful situations which students experience in the school environment may possibly causes of bodily symptoms. Insomnia, stomach aches and feelings of sickness (Witkin, 1999) as well as concentration problems and incapacity to study at home (Lohaous, Klein-Hebling, & Shebar, 1997) are some of the distractions caused by stress. Those stressful situations must definitely be tackled, as this is the only way for students to improve their abilities in the maximum, to gain self-confidence and belief in themselves (Nestoros & Vallianatou, 1996), which will help them have a successful presence at school and in their everyday life (Woodman & Hardy, 2003; Beattie, Hardy, & Woodman, 2004).

Higher levels of stress are observed during the transition from primary to secondary education. Most often, students report feelings of uncertainty and dissatisfaction with the complex curriculum, the many hours of teaching, the different teachers they teach, the complex grading system, and the amount of work (Murberg, & Bru, 2007; Torsheim, & Wold, 2001). Hampel and Petermann (2005) reported that teenage students experience stress feelings caused by the school environment, arguments with family members (parents, siblings) and schoolmates. The research conclusions of Kraag, Zeegers, Kok, Hosman and Abu-Saad (2006) are similar. According to them, the intense school demands for top performance and the disagreements and arguments between students cause stress to the students. The way in which students deal with the various stress factors, which are related to the school environment, might affect their future attitude to various problems (Murberg, & Bru, 2007). The report of Witkin (1999) is characteristic. In it the physical reactions of students to stress were recorded, for example insomnia, stomachaches and feelings of sickness; likewise Lohaous, Klein-Hebling and Shebar (1997), stated various reactions in the behavior of students, like feelings of anger and anxiety along with concentration problems affecting afternoon studying at home.

Nevertheless, there is a lack of bibliography focusing on an interdisciplinary approach to the Greek traditional dance, with thematic choices from history and geography and also investigating the decrease of anxiety taken by students who participate in the lesson.

Physical Culture and Sport. Studies and Research, 2020, 88, 18-30
DOI: 10.2478/pcssr-2020-0022

From what has been previously said, results show the importance of study mainly on the reduction of students' anxiety levels through the educational process and secondly, on the lack of past research on the topic of examination of an interdisciplinary curriculum program based on Greek traditional dancing. So, the purpose of this study was to investigate the effect of an interdisciplinary program of Greek folk dance, with items from history and geography on 8th grade middle school students'goal orientation and anxiety levels during class.

Methodology

Participants

The sample consisted of 260 students in the 8th grade of middle school. The students were divided into two groups, one of which was the experimental group (interdisciplinary approach to folk dance); the second was the control group (conventional approach to teaching). Students' classification in both groups was carried out by lot. The experimental group comprised 144 students, 76 boys and 68 girls, and the control group consisted of 116 students, 58 boys and 58 girls.

Intervention programme

Before the beginning of the intervention program, both the experimental and control group students took part in a test exploring their knowledge of Greek folk dances. Three hundred forty-five male and female students took this test, 260 of whom finally participated in the research (since they had not taken Greek folk dance lessons in any dancing associations).

Table 1. Experimental group interdisciplinary programme

Lesson	Dance – Subject	Aim	Instruments
1st	Koftos- Geography	Learning of dancing kinetic form – what prefecture?	cd player, Cards with the prefectures of Greece.
2nd	Kotsari - History	Learning of dancing kinetic form. The Empire of Trebizond. The uprooting of Pontians.	cd player , Map of Pontus.
3rd	Enteka - History	Learning of dancing kinetic form. Macedonia to Ottoman rule. Living conditions.	cd player, Wordsearch.
4th	Baidouska- Geography	Learning of dancing kinetic form. The concept of geographical apartment. Geographical borders.	cd player, Puzzle: geographical apartment.
5th	Karagouna– Geography	Learning of dancing kinetic form. Prefecture's capital.	cd player, Political map of Greece.
6th	Kalamatianos– History	Learning of dancing kinetic form. War of Greek Independence in the Peloponnese.	cd player, Banners of the War of Greek Independence. Battle hymn of Riga.
7th	Tsamikos- History	Learning of dancing kinetic form. Kleftes (rebel soldiers) and Armatoles.	cd player, The costume of Kleftes (rebel soldiers) and Armatoles- Fustanella
8th	Hasapia–History	Learning of dancing kinetic form. The Asia Minor Catastrophe.	cd player, Collecting information from the elderly.

Source: own study.

Physical Culture and Sport. Studies and Research, 2020, 88, 18-30
DOI: 10.2478/pcssr-2020-0022

The intervention programme lasted four weeks, with two teaching sessions per week. Eight in total interdisciplinary classes of Greek folk dances, exploiting material from history and geography, were attended by the experimental group (Table 1); eight conventional classes of Greek folk dance, as outlined by the curriculum of the Ministry of Education, were attended by the control group (Table 2).

The classes were held during the Physical Education class, which lasted 45 minutes. Both the experimental and the control groups attended classes with the same educational goals within these four weeks. Both groups were taught by the same teachers. All students were pre- and post-tested (before the first and after the eighth lesson, respectively).

Table 2. Control group programme

Lesson	Dance	Aim	Instruments
1st	Koftos	Learning of dancing kinetic form	cd player
2nd	Kotsari	Learning of dancing kinetic form	cd player
3rd	Enteka	Learning of dancing kinetic form	cd player
4th	Baidouska	Learning of dancing kinetic form	cd player
5th	Karagouna	Learning of dancing kinetic form	cd player
6th	Kalamatianos	Learning of dancing kinetic form	cd player
7th	Tsamikos	Learning of dancing kinetic form	cd player
8th	Hasapia	Learning of dancing kinetic form	cd player

Source: own study.

Measurements

To explore students' aims during class, the Goal Orientation (Papaioannou, Milosis, Kosmidou, & Tsigilis, 2002) questionnaire was used. This instrument included 29 items starting with the basic statement: 'In today's Greek Folk Dance lesson….' and continuing with the following aspects:

a) *personal development* (7 questions, e.g. 'as difficult as it was, I enjoyed learning new things');
b) *social acceptance* (7 questions, e.g. 'I wanted to give a good performance in order for everyone to like me');
c) *ego strengthening* (9 questions, e.g. my goal was to surpass others in dancing skills'); and
d) *ego protection* 6 questions, e.g. 'I was often afraid that I might seem hopeless while I was trying to put into practice a dancing skill').

To evaluate students' anxiety levels during class time, the Competitive State Anxiety Inventory (Martens, Burton, Vealey, Bump, &Smith, 1990), modified for the Greek population by Kakkos and Zervas (1996), was used. The scale consists of 15 items divided into three factors:

a) *somatic anxiety,* with five items (e.g. ' I feel tense in the stomach');
b) *cognitive anxiety* with five items (e.g. 'I'm concerned about reaching my goal'); and
c) *self-confidence* (e.g. 'I'm confident that I can pull through under pressure').

Responses were given on a 5-point Likert-type scale for both questionnaires, ranging from 1= totally disagree to 5= totally agree. The initial and final evaluations of the elements related to goal orientation and perceptions of students of the anxiety levels in class were carried out as experience within the school environment. The questionnaire was anonymous and filled in during the first (initial measurement) and fifth (final measurement) week in class.

Physical Culture and Sport. Studies and Research, 2020, 88, 18-30
DOI: 10.2478/pcssr-2020-0022

Statistical Analysis

The following statistical analyses were carried out: Confirmatory factor analysis, Reliability analysis, T-test for independent sample and Repeated Measures ANOVA in order to determine any possible differences within and between the experimental and the control group. The level of statistical significance was set at p<.01.

Results

Confirmatory factor analysis for the "Goal Orientation Questionnaire"

A confirmatory factor analysis was performed on the 29 subscales of the "Goal Orientation Questionnaire". The method of estimating parameters is that of maximum likelihood (Hu, & Bentler, 1995). The hypothesized model consists of four latent variables, namely "personal development", "social acceptance", "ego- strengthening" and ''ego protection''. The fit indices which were considered and their acceptable values are: namely minimum discrepancy (CMIN or χ2), degrees of freedom (D.F.), minimum discrepancy divided by the degrees of freedom (χ2/d.f.)<5, Root Mean Square Error of Approximation (RMSEA)<.08, Standardized Root Mean Square Residual (SRMR) <.05, and incremental indices Comparative Fit Index (CFI) >.90, Normed Fit Index (NFI) (Bentler, 1990; McDonald & Marsh, 1990; Mulaik et al., 1989).

Table 3 . Model Fit Indices

	N	X^2	DF	X^2/DF	NFI	CFI	RMSEA	SRMR
Model	260	1472.87	371	3.97	.91	.90	.046	.028

Source: own study.

The results of the confirmatory factor analysis demonstrated that the hypothesized model produced a significant chi-square (1472.87), and χ^2/df (1472.87/371)=3.97, p<.001. The NFI and CFI were found to be .91 and .90 respectively. The RMSEA was also considered to assess the degree of ft of the model. The RMSEA value for the hypothesized model was found to be .046 and SRMR=.028 (Table 3).

Confirmatory factor analysis for the "Competitive State Anxiety Inventory-2"

A confirmatory factor analysis was performed on the 15 subscales of the "Competitive State Anxiety Inventory-2". The method of estimating parameters is that of maximum likelihood (Hu, & Bentler, 1995). The hypothesized model consists of three latent variables, namely "somatic anxiety", "cognitive anxiety", and ''self-confidence''.

The fit indices which were considered and their acceptable values are: namely minimum discrepancy (CMIN or χ2), degrees of freedom (D.F.), minimum discrepancy divided by the degrees of freedom (χ2/d.f.) <5, Root Mean Square Error of Approximation (RMSEA) <.08, Standardized Root Mean Square Residual (SRMR) <.05, and incremental indices Comparative Fit Index (CFI) >.90, Normed Fit Index (NFI) (Bentler, 1990; McDonald & Marsh, 1990; Mulaik et al., 1989).

Table 4**.** Model Fit Indices

	N	X^2	DF	X^2/DF	NFI	CFI	RMSEA	SRMR
Model	260	348.87	87	4.01	.90	.92	.038	.031

Source: own study.

Physical Culture and Sport. Studies and Research, 2020, 88, 18-30
DOI: 10.2478/pcssr-2020-0022

The results of the confirmatory factor analysis demonstrated that the hypothesized model produced a significant chi-square (348.87), and χ^2/df (348.87/87)=4.01, p<.001. The NFI and CFI were found to be .90 and .92 respectively. The RMSEA was also considered to assess the degree of fit of the model. The RMSEA value for the hypothesized model was found to be .038 and SRMR=.031 (Table 4).

Reliability analysis

The 'Cronbach alpha' internal cohesion indicator of the two questionnaires was satisfactory. The values concerning all factors for pre- and post- test measurements were: *Ego-strengthening*: .78 and .83*, Ego protection*: .83 and .93; *Social acceptance*: .88 and .84; *Personal development*: .85 and .85; *Cognitive anxiety*: .97 and .87; *Somatic anxiety*: .97 and .94; and finally, *Self-confidence*: .87 and .89, respectively (Table 5).

Table 5. Reliability analysis of the factors for initial and final measurements

Factors	Pre Test	Post Test
Goal Orientation		
Ego-strengthening	.78	.83
Ego protection	.83	.93
Social acceptance	.88	.84
Personal development	.85	.85
Anxiety		
Cognitive anxiety	.97	.87
Somatic anxiety	.97	.94
Self-confidence	.87	.89

Source: own study.

At first,the independent t-test analysis was applied to check whether there were any statistically-significant differences in the questionnaire factors between the experimental and control group at the initial measurement. From the results, it appeared that any differences in all factors were not statistically significant. Therefore, the members of the two groups were considered to be characterised by the same level to the factors which were studied before commencement of the programme (Table 6).

Table 6. Control of statistically-significant differences between the experimental and control team at the initial measurement

	Factors	Experimental	Control	t	df	p
1.	Ego-strengthening	4.21	4.20	.253	258	>.05
2.	Ego protection	4.34	4.32	.517	258	>.05
3.	Social acceptance	1.47	1.48	.099	258	>.05
4.	Personal development	1.46	1.46	-.073	258	>.05
5.	Cognitive anxiety	4.28	4.27	.039	258	>.05
6.	Somatic anxiety	4.31	4.32	-.079	258	>.05
7.	Self confidence	1.62	1.63	-.335	258	>.05

Source: own study.

Repeated Measures ANOVA

The repeated measures ANOVAwas then applied for each factor of the Goal Orientation questionnaire. The analysis model included 'measurement' (initial - final) as the repetition variable and 'group' (experimental - control) as the independent variable. The results showed that there was a statistically-significant interaction between the variables 'measurement' and 'group' for 'ego strengthening' [$F_{(1,258)}$=3053.34, p<.001], 'ego-

Physical Culture and Sport. Studies and Research, 2020, 88, 18-30
DOI: 10.2478/pcssr-2020-0022

protection' [$F_{(1,258)}$ =3003.67, p<.001], 'social acceptance' [$F_{(1,258)}$ =1737.91, p<.001] and 'personal-development' [$F_{(1,258)}$ =2644.14, p<.001]. The interaction analysis, with the use of the multiple comparison test (post hoc Bonferroni), showed that the experimental group had a statistically-significant improvement in grades after the end of the intervention programme, while the control group remained stable (Table 7). More specifically, there was a statistically-important decrease of 'ego strengthening' and 'ego protection' in the experimental group and a parallel statistically-significant increase of 'social acceptance' and 'personal development'.

Finally, the repeated measures ANOVA analysis was applied for the 'cognitive anxiety', 'somatic anxiety', and 'self-confidence' factors. The analysis model included the variable 'measurement' (initial - final) as the repetition variable and the variable 'group' (experimental - control) as the independent variable. The findings revealed that there was a statistically-significant interaction between measurement and group for the'cognitive anxiety' [$F_{(1,258)}$ =1706.37, p<.001], 'somatic anxiety' [$F_{(1,258)}$ =1274.47, p<.001], and 'self-confidence' [$F_{(1,258)}$ =1665.15, p<.001] factors. The post hoc Bonferroni test indicated that the experimental group had a statistically-important decrease of cognitive and somatic anxiety levels and a parallel statistically-significant increase of self confidence after the end of the intervention programme. On the contrary, the control group remained constant (Table 7).

Table 7. Means (M) and Standard Deviation (SD) of the experimental and control team at the initial and final measurement for analysed factors

Factors	Group	Initial		Final		Measurement/Interaction
		M	SD	M	SD	
Ego-strengthening	Experimental	4.21	.37	1.53	.40	$F_{(1,258)}$ =3053.34, p<.001
	Control	4.19	.34	4.18	.33	
Ego protection	Experimental	4.34	.39	1.49	.50	$F_{(1,258)}$ =3003.67, p<.001
	Control	4.32	.33	4.32	.32	
Social acceptance	Experimental	1.47	.39	4.39	.39	$F_{(1,258)}$ =1737.91, p<.001
	Control	1.48	.44	1.47	.31	
Personal development	Experimental	1.46	.37	4.25	.46	$F_{(1,258)}$ =2644.14, p<.001
	Control	1.46	.31	1.46	.32	
Cognitive anxiety	Experimental	4.28	.52	1.74	.48	$F_{(1,258)}$ =1706.37 p<.001
	Control	4.27	.42	4.25	.42	
Somatic anxiety	Experimental	4.31	.61	1.90	.35	$F_{(1,258)}$ =1274.47 p<.001
	Control	4.32	.62	4.31	.62	
Self confidence	Experimental	1.62	.36	4.08	.51	$F_{(1,258)}$ =1665.15, p<.001
	Control	1.63	.29	1.61	.30	

Source: own study.

Physical Culture and Sport. Studies and Research, 2020, 88, 18-30
DOI: 10.2478/pcssr-2020-0022

Correlation analysis

Pearson correlation analyses were conducted to assess the relationship between the amount of student (experimental group) ego-strengthening, ego-protection, social acceptance and personal-development with cognitive, somatic anxiety and self-confidence. Results indicated that there was a strong positive correlation between: a) cognitive anxiety and ego strengthening (r=.897, p<.01); ego protection (r=.908, p<.01); b) somatic anxiety and ego strengthening (r=.891, p<.01); and ego protection (r=.874, p<.01); c) self confidence and social acceptance (r=.929, p<.01) and personaldevelopment (r=.920, p<.01). Additionally, there was a strong negative correlation between: a) cognitive anxiety and social acceptance (r=-.915, p<.01) and personal development (r=-.897, p<.01); b) somatic anxiety and social acceptance (r=-.913, p<.01) and personal development (r=-.899, p<.01); c) self confidence and ego strengthening (r=-.922, p<.01) and ego protection (r=-.924, p<.01). The increase in self confidence correlated to the increase in social acceptance and personal development and to the decrease in ego strengthening and ego protection. Additionally, the decrease in cognitive anxiety and somatic anxiety correlated positively to the decrease in ego strengthening and ego protection and to the increase in social acceptance and personal development (Table 8).

Table 8. Pearson correlations analysis among factors of the two questionnaires

Factors	Cognitive anxiety	Somatic anxiety	Self- confidence
Ego – strengthening			
Pearson Correlation	.897**	.891**	-.922**
Sign. (2-tailed)	.001	.001	.001
N	260	260	260
Ego-protection			
Pearson Correlation	.908**	.874**	-.924**
Sign. (2-tailed)	.001	.001	.001
N	260	260	260
Social acceptance			
Pearson Correlation	-.915**	-.913**	.929**
Sign. (2-tailed)	.001	.001	.001
N	260	260	260
Personal development			
Pearson Correlation	-.897**	-.899**	.920**
Sign (2-tailed)	.001	.001	.001
N	260	260	260

Note: ** Correlation is significant at the 0.01 level (2-tailed).
Source: own study.

Discussion

The aim of this study was to explore the effect of an interdisciplinary program of Greek folk dance with items from history and geography on 8th grade middle school students' goal orientation and anxiety levels during class. The results showed significant differences regarding the students of the experimental group in relation to those of the control group. Particularly, as far as the factors "ego-strengthening" and "ego-protection" are concerned, a decrease in the levels of the experimental group was recorded from initial to final measurement. In contrast, in the students of the control group there were no significant differences even though their percentages decreased. Regarding the variables "personal development" and "social acceptance", the students of the experimental group increased their percentages considerably between measurements. On the contrary, no significant differences in the attitudes of the control group students were recorded although they improved their percentages too.

Physical Culture and Sport. Studies and Research, 2020, 88, 18-30
DOI: 10.2478/pcssr-2020-0022

From all the above we can legitimately claim that Greek folk dance constitutes a kinetic activity through which the teacher has the chance to implement teaching approaches, like interdisciplinary teaching, which will not only reduce the students orientation towards their ego but which will, additionally, make them turn to hard work.

The interdisciplinary approach makes the class more appealing to students (Cone, Werner, Cone & Wood, 1998), maintaining or even reinforcing their motivation into active learning, emphasizing the value of effort, learning and personal improvement. Gotzaridis, Papaioannou, Antoniou, and Albanidis (2007), in a study on the effects of an interdisciplinary program of Physical Education and Physics, found an increase in interest and intrinsic motivation as well as participation levels of the so called "indifferent" students in class.

The positive consequences of the program were obvious in this case as well, since the experimental group students moved on to a differentiation of their goals and, as a result, to a change of attitude, by significantly decreasing their percentages in the factors "ego- protection" and "ego- strengthening" and by raising their levels in the "social acceptance" and "personal development" factors.

Regarding the anxiety, the students experienced during class, from the results of the research, we observed a significant decrease in somatic and cognitive anxiety between measurements. In contrast, the control group members, though they exhibited a decrease in their percentages, this was not statistically significant. Additionally, from the results of the research we observed a notable increase in the self-confidence of the experimental group students in contrast to the control group, whose members did not show a statistically significant change in their percentages. The results of scientific studies revealed that the combination of physical education lessons with any other item no matter the different academic level had very good results on the progression of the students. Filippou, Bebetsos, Vernadakis, Zetou and Derri (2014) investigated the effect of an interdisciplinary program of Greek traditional dance with issues from music and sociology, on high school students' anxiety levels. Results revealed a significant reduction of both the somatic and cognitive anxiety but also an important increase in self-confidence of the experimental group. The results of the present study come into contrast with the results of Kaprinis, Diggelidis and Papaioannou (2009), in which the students of the experimental group showed increased percentages of somatic and cognitive anxiety. Probably, this differentiation is due the content of the interdisciplinary approach which in this investigation was consisted of history and geography issues, while in the research of Kaprinis et al. (2009) came from mathematics. However, Kaprinis et al. (2009) verified what Usnick, Johnson and White (2003) had also found; the positive impact of the program on the development of mathematical skills, internal motivation and satisfaction of the students. Similar positive learning outcomes were reported by Tsapatori, Pollatou, Gerodimos and Mavromatis (2009) who applied a music-movement program on first grade students. Moreover, dance classes in Physical Education curricula constitutes an activity which contributes to the socialization process of a person (Rokka, Mavridis, Mavridou, Kelepouris & Filippou, 2015), as well as to escaping boredom and monotony (Mavridou, 2012).

Conclusions

The above results confirm that an interdisciplinary program of Greek folk dance drawing material from History and Geography reduces the rates of cognitive and somatic anxiety while it simultaneously boosts students' self-confidence. It is evident that interdisciplinary teaching helps to advance critical thinking and cognitive development, engaging students and helping them to develop knowledge, and problem solving skills, self-confidence, self-efficacy and passion for learning. Most of researches were conducted in primary and preschool pupils, less in secondary education and even least in higher education. All studies showed how interdisciplinary programs had a positive impact on improving different skills (language, mathematical, movement) of students. Regarding with physical education classes, especially in secondary education, it is evident that more research needs to be done; we need to think more deeply about the benefits of an interdisciplinary programs, the extent of integration required and how this integration will be achieved.

Limitations

The results of the research apply exclusively to students on 8th grade Middle School of a certain geographical and cultural environment. To confirm the results more research should be conducted on a larger sample of various ages or levels of education and of other geographical and cultural environments. Finally, future research could examine similar teaching approaches drawing on material from various fields, such as music, sociology, mathematics or traditional-local cuisine.

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Factors directing individuals to computer games in the process of evaluating recreational activities

Authors' contribution:
A) conception and design of the study
B) acquisition of data
C) analysis and interpretation of data
D) manuscript preparation
E) obtaining funding

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ABSTRACT

This study aims to examine the motivational factors that direct individuals to computer games in the process of evaluating leisure activities. The study is designed in descriptive and relational survey models, which are among the quantitative research patterns. A total of 1677 individuals participated in the study. A personal information form and the Computer Gaming Motivation Scale were used. An independent sample t-test, one-way analysis of variance, and Pearson correlation test were used to analyze the data. According to the results, there were significant differences in the concentration, entertainment, escape, learning, and socialization sub-dimensions of the participants in favor of the groups playing in Internet cafes. The findings indicate that when more time is spent with information and communication technologies, there is a decrease in concentration and an increase in entertainment and escape. Furthermore, when the relationship between the sub-dimensions of the scale was examined, positively moderate and high correlations were found among concentration, entertainment, escape, learning, and socialization. As a result, rapid technological changes and developments provide many opportunities for individuals. It is thought that individuals' busy work lives and monotonous daily routines cause them to prefer easily accessible activities during their leisure time.

KEYWORDS

Recreational activities, computer games, socialization, learning

Introduction

Throughout human history, adapting to the rapid developments and changes in technology that affect our social life is one of the indispensable elements of our daily life (Yıldız, 2016). Today, as a result of rapid developments and changes, the preferences of games and game materials have also started to change accordingly. Although games are older than the invention of writing, video games appeared in the 1970s (Avcı & Avşar, 2016). The games that started with Atari in Korea and Japan have turned into the digital games of today (Baranowski et al., 2008). Digital games are games that take place on computers, game consoles, and mobile phones (Rideout, Foehr, & Roberts, 2010), and in which a visual background is prepared for users and played with a user login after being programmed with various technologies (Çetin, 2013).

Computer games are activities that are a popular entertainment tool marketed as an experience to consumers (Bryce & Rutter, 2003). In addition to providing the opportunity to develop critical thinking skills and learn by

Physical Culture and Sport. Studies and Research, 2020, 88, 31-40
DOI: 10.2478/pcssr-2020-0023

doing and through experience, computer games have become one of the most preferred leisure time activities for adolescents and young adults (Griffiths, 2010). Karaküçük (2014) describes leisure time activities as relaxing and entertaining activities in which individuals or groups voluntarily participate, enjoy, and are delighted. Arslan (2010), on the other hand, defines leisure time activities as activities in which people are free to participate voluntarily, both for themselves and for others. Along with the developing communication technologies, children, adolescents, and adults possess easy access to digital games via mobile phones, tablets, and computers. Granic et al. (2014) point out that computer games may have cognitive, affective, mental, and motivational benefits. Dye et al. (2009) state that in the rush of everyday life, rapid decision making through digital games positively contributes to participants' lives.

When the studies conducted in the literature are examined, it is seen that much research has been done on the addiction of children and adolescents to computer games (Çavuş & Ayhan, 2014; Desai et al., 2010; Jeong & Kim, 2011; Korkmaz & Korkmaz, 2019; Rooij et al., 2010; Sağlam & Topsümer, 2019; Salguero & Moran, 2002). As a leisure time activity that the individual participates in voluntarily, computer games have a peculiar limitedness of pattern and duration (Binark & Bayraktutan-Sütçü, 2008). It can be said that the main reason why individuals prefer computer games as a leisure time activity is because it is easy to use them to engage in social interaction, and because they embody competition and entertainment. Esentaş et al. (2018) state that individuals of all ages prefer digital games as a recreational activity that allows them to take advantage of the little spare time they have in their busy lives. It is seen that individuals prefer computer games that they can passively enjoy rather than more active activities in their leisure time. In this context, the aim of the research is to determine what motivational factors lead individuals to computer games in the evaluation of leisure activities.

Materials and methods

Research model

This study is designed in descriptive and relational survey models, which are among the quantitative research patterns.

Study group

A total of 1677 individuals (810 females, 867 males) participated in the study. These individuals were reached using a convenience sampling method, which is among the non-random sampling methods, from participants playing computer games in Manisa and İzmir (Turkey) provinces (Table 1).

When Table 1 is examined, it can be observed that 867 (51.7%) males and 810 (48.3%) females were included in the study. A total of 944 (56.3%) of the participants were between the ages of 18 and 25, and when they were examined in terms of educational status, 575 (34.3%) of the participants were graduates of elementary school, 952 (56.8%) were graduates of high school, and 150 (8.9%) were university graduates. Considering the occupational distributions, 628 individuals were still university students, 350 (20.9%) were public employees, and 388 (23.1%) were private sector employees.

Physical Culture and Sport. Studies and Research, 2020, 88, 31-40
DOI: 10.2478/pcssr-2020-0023

Table 1. Descriptive statistics for demographic characteristics

Variables		N	%
Gender	Female	810	48.3
	Male	867	51.7
Age	18-25	944	56.3
	26-35	540	32.2
	36-45	135	8.1
	46-55	42	2.5
	56+	16	1
Education Status	Primary School	575	34.3
	High School	952	56.8
	University	150	8.9
Occupation	Student	628	37.4
	Public employee	350	20.9
	Private sector employee	388	23.1
	Housewife	72	4.3
	Retired	28	1.7
	Not working	211	12.6

Source: own study.

Data collection tools

In the research, a personal information form and the Computer Gaming Motivation Scale were used as data collection tools. In the personal information form, the participants were asked about their gender, age, educational status, daily use of information and communication technologies, and information about the place where they play games.

Computer Gaming Motivation Scale: This measurement tool was developed by Akyıldız-Munusturlar and Munusturlar (2018). The scale consists of 17 items and 5 sub-dimensions to measure individuals' motivations (reasons for engagement) to engage in computer games and has a 5-point rating. Reliability analysis results for the current research are presented in Table 2.

Table 2. Reliability analysis of the Computer Gaming Motivation Scale sub-dimensions

Factors	Items	Cronbach's Alpha *(α)*
Concentration	4 Items	*0.900*
Entertainment	4 Items	*0.950*
Escape	3 Items	*0.876*
Learning	4 Items	*0.930*
Socialization	2 Items	*0.873*

Source: own study.

Data analysis

Descriptive statistics were examined for the preliminary evaluations, and the percentage distribution of data, means, and standard deviations were examined. The kurtosis-skewness values were taken into consideration regarding whether the scale means to meet the normality hypothesis, and all scale sub-dimensions were found to have values between +2 and -2 (Byrne, 2010; Hair et al., 2010). In terms of variables related to personal information, an independent sample t-test was used to determine whether there was a difference among the means of computer game motivation of the participants; one-way analysis of variance was used in the

Physical Culture and Sport. Studies and Research, 2020, 88, 31-40
DOI: 10.2478/pcssr-2020-0023

comparison between groups; Tukey's HSD test was used to determine the group that caused the difference; and the Pearson correlation test was conducted to test the relationships among the scales.

Results

In this part of the study, indications of and comments on the data obtained as a result of statistical analyses are included.

Table 3. Descriptive statistics

	Variables	N	%	Total	$\bar{x}$	SD	Min.	Max.
Daily ICT Usage	No	22	1.3	1677				
	Less than 1 hour	217	12.9					
	1-3 hours	676	40.3					
	4-6 hours	526	31.4					
	7 hours or more	236	14.1					
Game place	Home	1405	83.8	1677				
	Internet cafe	272	16.2					
Computer Gaming Motivation Scale								
Concentration				1677	2.67	1.03	1.00	5.00
Entertainment				1677	3.29	1.09	1.00	5.00
Escape				1677	2.67	1.02	1.00	5.00
Learning				1677	2.88	1.06	1.00	5.00
Socialization				1677	3.06	1.14	1.00	5.00

Source: own study.

According to Table 3, when durations of the participants' daily use of information and communication technologies (mobile phones, tablets, computers) were examined, it was observed that 676 (40.3%) individuals spent 1-3 hours, 526 (31.4%) participants spent 4-6 hours, and 236 (14.1%) individuals spent 7 hours or more on their devices. In terms of places to play games, it was determined that 1403 (83.8%) participants preferred to play at home and 272 (16.2%) participants preferred to play in Internet cafes. When we look at the gaming motivation sub-dimensions, it is obvious that entertainment ($\bar{x} = 3.29$) and socialization ($\bar{x}$=3.06) get the highest averages.

Table 4. Comparison of differences of Computer Gaming Motivation Scale sub-dimensions according to the gender variable

Variables		n	$\bar{x}$	SD	df	t	p
Concentration	Female	810	2.562	0.979	1674.04	-4.321	0.000*
	Male	867	2.779	1.073			
Entertainment	Female	810	3.013	1.059	1669.76	-10.350	0.000*
	Male	867	3.552	1.072			
Escape	Female	810	2.497	0.990	1675.00	-6.619	0.000*
	Male	867	2.824	1.027			
Learning	Female	810	2.610	0.981	1674.32	-10.291	0.000*
	Male	867	3.125	1.071			
Socialization	Female	810	2.728	1.048	1674.56	-11.906	0.000*
	Male	867	3.364	1.140			

Note: * p<0.05
Source: own study.

Physical Culture and Sport. Studies and Research, 2020, 88, 31-40
DOI: 10.2478/pcssr-2020-0023

In Table 4, difference results are given in terms of the Computer Gaming Motivation Scale sub-dimensions according to gender. Significant differences were found in favor of males in the concentration ($t_{(1677)}$=-4.321), entertainment ($t_{(1677)}$=-10.350), escape ($t_{(1677)}$=-6.619), learning ($t_{(1677)}$=-10.291), and socialization ($t_{(1677)}$=-11.906) sub-dimensions ($p<0.05$). The results of the analysis show that the male participants' computer gaming motivation levels are higher than those of the female participants.

Table 5. Comparison of differences of Computer Gaming Motivation Scale sub-dimensions according to the game place variable

Variables		N	$\bar{x}$	Sd.	df	t	p
Concentration	Home	1405	2.498	0.907	337.36	-14.569	**0.000***
	Internet cafe	272	3.585	1.165			
Entertainment	Home	1405	3.152	1.047	1675.00	-12.299	**0.000***
	Internet cafe	272	4.010	1.084			
Escape	Home	1405	2.573	1.002	1675.00	-8.646	**0.000***
	Internet cafe	272	3.146	0.990			
Learning	Home	1405	2.719	0.972	353.65	-13.278	**0.000***
	Internet cafe	272	3.688	1.124			
Socialization	Home	1405	2.882	1.050	1675.00	-15.226	**0.000***
	Internet cafe	272	3.961	1.169			

Note: * $p<0.05$
Source: own study.

In Table 5, different results are given in terms of the Computer Gaming Motivation Scale sub-dimensions according to the game place variable. Significant differences were found in favor of the groups playing games in Internet cafes in the concentration ($t_{(1677)}$=-14.569), entertainment ($t_{(1677)}$=-12.299), escape ($t_{(1677)}$=-8.646), learning ($t_{(1677)}$=-13.278), and socialization ($t_{(1677)}$=-15.226) sub-dimensions ($p<0.05$).

In Table 6, ANOVA test results are given regarding the Computer Gaming Motivation Scale sub-dimensions and age groups. According to the results of the analysis, significant differences were found according to age groups in the computer game motivation levels of concentration ($F_{(4-1672)}$=16.851), entertainment ($F_{(4-1672)}$=60.914), escape ($F_{(4-1672)}$=12.795), learning ($F_{(4-1672)}$=23.433), and socialization ($F_{(4-1672)}$=43.230) sub-dimensions. In other words, the computer gaming motivations of the participants vary significantly depending on the age variable. Tukey's test was carried out to determine the differences between the units among the groups; the results are presented in Table 6.

Physical Culture and Sport. Studies and Research, 2020, 88, 31-40
DOI: 10.2478/pcssr-2020-0023

Table 6. ANOVA test results of the Computer Gaming Motivation Scale sub-dimensions according to the age group variable

Variables	Groups	n	Mean	Sd.		Sum of Squares	df	Mean Square	F	p	Sign. Dif.
Concentration	1- 18-25	944	2.803	1.081	Between	69.435	4	17.359	16.851	0.000*	1-2, 1-3 1-4, 2-3 2-4, 2-5 3-4
	2- 26-35	540	2.616	0.925	Within Groups	1722.372	1672	1.030			
	3- 36-45	135	2.348	1.000	Total	1791.806	1676				
	4- 46-55	42	1.815	0.757							
	5- 56+	16	2.031	0.287							
Entertainment	1- 18-25	944	3.586	1.049	Between	257.591	4	64.398	60.914	0.000*	1-2, 1-3 1-4, 2-3 2-4, 3-4 3-5, 5-4
	2- 26-35	540	3.025	0.999	Within Groups	1767.612	1672	1.057			
	3- 36-45	135	2.693	1.085	Total	2025.203	1676				
	4- 46-55	42	1.857	0.891							
	5- 56+	16	3.719	0.375							
Escape	1- 18-25	944	2.789	1.064	Between	51.996	4	12.999	12.795	0.000*	1-2, 1-3 1-4, 2-3 2-4, 3-4 3-5, 4-5
	2- 26-35	540	2.562	0.962	Within Groups	1698.669	1672	1.016			
	3- 36-45	135	2.427	0.866	Total	1750.666	1676				
	4- 46-55	42	1.921	0.867							
	5- 56+	16	2.896	0.291							
Learning	1- 18-25	944	3.063	1.096	Between	99.927	4	24.982	23.433	0.000*	1-2, 1-3 1-4, 2-4 3-4, 4-5
	2- 26-35	540	2.696	0.960	Within Groups	1782.524	1672	1.066			
	3- 36-45	135	2.535	0.930	Total	1882.451	1676				
	4- 46-55	42	1.994	0.928							
	5- 56+	16	3.141	0.387							
Socialization	1- 18-25	944	3.337	1.156	Between	204.608	4	51.152	43.230	0.000*	1-2, 1-3 1-4, 2-4 3-4, 4-5
	2- 26-35	540	2.784	1.009	Within Groups	1978.397	1672	1.183			
	3- 36-45	135	2.552	1.013	Total	2183.004	1676				
	4- 46-55	42	1.905	0.864							
	5- 56+	16	3.031	0.125							

Note: * $p<0.05$
Source: own study.

Physical Culture and Sport. Studies and Research, 2020, 88, 31-40
DOI: 10.2478/pcssr-2020-0023

Table 7. Correlation analysis results of some personal information and Computer Gaming Motivation Scale sub-dimensions

Variables		1	2	3	4	5	6
1- Ages	r	1					
2- Daily ICT Usage	r	**-0.179***	1				
3- Concentration	r	**-0.190***	**-0.127***	1			
4- Entertainment	r	**-0.305***	**0.105***	**0.541***	1		
5- Escape	r	**-0.143***	**0.083***	**0.522***	**0.704***	1	
6- Learning	r	**-0.196***	-0.042	**0.554***	**0.708***	**0.653***	1
7- Socialization	r	**-0.276***	0.007	**0.492***	**0.668***	**0.541***	**0.772***

* $p<0.05$

After examining the data in Table 7, a negatively low and medium level relationship was found between age variables and daily usage of information and communication technologies (r=-0.179) and concentration (r=-0.190), entertainment (r=-0.305), escape (r=-0.143), learning (r=-0.196), and socialization (r=-0.276), which are the Computer Gaming Motivation Scale sub-dimensions. Accordingly, as the ages of the participants increase, both their use of information and communication technologies and their motivations for computer gaming decrease.

A negatively low level relationship (r=-0.127) was found between the daily usage of information and communication technologies and the sub-dimension of concentration. In the entertainment (r=0.105) and escape (r=0.083) sub-dimensions, a positive low level relationship was found. The findings indicate that when more time is spent with information and communication technologies, there is a decrease in concentration and an increase in entertainment and escape. Also, when the relationship among the sub-dimensions of the scale was examined, positively moderate and high correlations were found among concentration, entertainment, escape, learning, and socialization.

Conclusions and discussion

Rapid changes and developments in technology offer many opportunities for individuals. Individuals are affected by the positive or negative results of these opportunities in line with their own preferences. It is thought that individuals' busy working lives and monotonous daily routines lead them to prefer easily accessible activities in their allocated leisure time. Mobile phones and computers are always at hand and are easy to access as a recreational activity tool. Anderson and Tracey (2001) argue that technology can reduce or increase our leisure time. Digital games are the most preferred leisure time activity for adolescents (Griffiths, 2010). According to a comparative study conducted among some of the European countries, computer games are the most preferred interactive media tool for children and adolescents between the ages of six and sixteen (Fromme, 2003). A total of 5.3% of the participants in our study are between the ages of 18 and 25.

In the study of Durak-Batıgün and Kılıç (2011), 18.9% of the students residing in Ankara and Istanbul provinces were found to be addicted to the Internet, and it was determined that males' addiction to computer games was significantly higher than females'. When other studies in the literature are examined that were conducted in different types of schools such as primary schools, secondary schools, high schools, and universities, it can also be observed that digital game addiction is higher among male students than female students (Eni, 2017; Erboy, 2010; Kars, 2010; Kurtbeyoğlu, 2018; Lemmens & Valkenburg, 2009; Şahin & Tuğrul, 2012). These studies overlap with our research findings.

When Akyıldız-Munusturlar and Munusturlar (2018) explain the concept of motivation for engaging in computer games, the concentration sub-dimension is an important concept, especially because it has the feature of providing information for the experience of flow. Bayırtepe and Tüzün (2007) stated in their study on students

that computer games not only offer relaxation and contribute to the motivation of students, but also increase their success by enabling them to improve their focus on their lessons. In the studies conducted, they found that people who play digital games regularly see digital games as a means of relaxation and stress relief (Ballabio et al., 2017; Király et al., 2015; Russoniello et al., 2013; Snodgrass et al., 2014; Wack & Tantleff-Dunn, 2009). It can be said that adults often use computer games as an escape tool to de-stress and better deal with stress in their daily lives.

It is stated that there is an opportunity for social interaction with people they know or do not know in computer games, and these games also offer opportunities for teamwork and socialization among players (Yee, 2006). The studies in the literature have found that computer games contribute to psychological empowerment, lifelong learning, self-sufficiency, psychological well-being, socialization, and decreased loneliness (Bier et al., 1997; Hu & Leung, 2003; Haythornthwaite & Wellman, 2002; Leung & Lee, 2005). In addition to these contributions, the conscious use of computer games especially in young people is the point that should be emphasized with care. Being over-motivated by computer games may bear negative consequences in health and physical and cultural development. Literature studies point to technological developments and their products as one of the main causes of decreased physical activity (Rosenberg, 2013). Therefore, keeping young people away from excessive computer habits is crucial. On the other hand, it is stated that technological developments have an important effect on participants' motivation. This study develops a recreational approach to computer games. However, it should not be forgotten that having the basic values of physical education and sports culture is important, as these values encourage individuals to maintain healthy levels of physical activity. Vaghetti et al., (2018) state that when young people move their bodies and participate in different activities, these actions have a positive effect on their internal motivation.

Thus, rapid changes and developments in technology offer many opportunities for individuals. As a consequence of how they choose to utilize these opportunities, individuals are affected either positively or negatively by these technological developments. It is supposed that people prefer easily accessible activities because of their busy professional lives and monotonous daily routines. The findings of the study show that the new generation has high motivation levels for computer gaming and specifically utilizes online platforms to have fun, escape, learn, and socialize.

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Coach or sensei? His group relations in the context of tradition

Authors' contribution:
A) conception and design of the study
B) acquisition of data
C) analysis and interpretation of data
D) manuscript preparation
E) obtaining funding

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ABSTRACT

In the perspective of the General Theory of Fighting Arts, an analysis of socio-cultural factors that determine the opposition of the role of a teacher of martial arts (Jap. sensei) to the role of a sports trainers was undertaken. The structural cultural context, cultural patterns, and social institutions resulting from divergent goals were taken into account. The roles of teachers and trainers result from these conditions. The existence of the separate roles of the master-teacher in martial arts and the sports trainer was established. These roles manifest themselves in different relations with students or players. Democratic and egalitarian interactions in sports teams include player and coach relations. In traditional martial arts, the dominance of the teacher is more accepted. However, there is also a social position combining the features of the sensei and the trainer that is typical for combat sports that are also martial arts (participating in sports competitions). As there are relationships of subordination in the hierarchical societies of Japan and Korea, there is no problem with recognizing the primary role of the sensei in these cultures. The position of the master-teacher is also sanctified by tradition. Reducing educational systems, which are the paths of martial arts, to oriental varieties of sports would be a serious factual mistake.

KEYWORDS

Martial arts, combat sports, coach, teacher, position in the group

Introduction

The general theory of martial arts has been developed systematically since 2000 in works such as *Ido Movement for Culture*.

> *"The identity of each of the sciences is particularly determined by problems and specialized language: names, categories, concepts, hypotheses, theories. Only mature sciences have a specific, original detailed methodology (...) in the case of the Humanistic Theory of Martial Arts, there is already a specialist scientific journal (indicated above – the author's note). (...) developing a separate research methodology does not have to be constitutive for martial arts science,"*

as Kazimierz Obodyński (2003, p. 11) once wrote. Here, the adjective "humanistic" results mainly from the emphasis on a man who is placed in the center of scientific, interdisciplinary reflection. Therefore, the next step in the development of theoretical reflection at the Rzeszów Scientific School was broadly understood as "martial arts anthropology," with the development of philosophical, sociological, anthropological, and cultural aspects (Cynarski, 2012, 2018).

Physical Culture and Sport. Studies and Research, 2020, 88, 41-48
DOI: 10.2478/pcssr-2020-0024

Martial arts are most often studied in the field of physical culture sciences.

> *"As Cynarski showed in his many works, Far Eastern self-fulfillment systems (including martial arts in particular) deserve, due to their specificity, equal treatment with other basic fields of physical culture, such as sport, physical recreation, physical education, active tourism or rehabilitation (...) Wojciech Cynarski proposes to include martial arts in a broadly understood systemic perspective. This perspective is to take into account the problems of spirituality and morality, cultural ethos and interrelationships between various aspects of these issues"* (Obodyński, 2003, p. 13).

Gradually, martial arts theory was expanded to include issues in the fields of culture sciences, philosophical anthropology, hoplology (science of military cultures), pedagogy, and the systemic concept of health (*cf.* Zaborniak, 2005; Cieszkowski & Sieber, 2006; Obodyński, 2009; Cieszkowski, 2010; Kernspecht & Brizin, 2012; Cynarski, 2017; Pawelec, 2020).

In addition to the concepts developed at the Rzeszów School centered around the *Ido Movement for Culture. Journal of Martial Arts Anthropology* quarterly, today's *General Theory of Fighting Arts* has also influenced the concepts of other authors: in particular, the typological suggestions by Bolelli (2008); the aesthetic, anthropological, and cultural concepts of Jones' team (2002); the concepts of von Clausewitz's war strategy (Cynarski & Sieber, 2012); and the pedagogical analysis of Wolters (2002, 2005) and Szyszko-Bohusz (2011, 2013). It is hard to overestimate the scientific discussions at IMACSSS (International Martial Arts and Combat Sports Scientific Society) conferences among specialists such as Fuminori Nakiri, Abel Figueiredo, Thomas Green, Carlos Gutierrez-Garcia, and Sergio Raimondo. The philosophy of martial arts developed in this way, understood here as their general theory, offers a scientific framework for considering the status positions of the sports trainer and the *sensei*, i.e. a teacher of martial arts.

According to Shizuya Sato, the *sensei* title applies to venerable teachers with high grades (5-10 dan) or academic professors. The masters, however, are those with the title or function *hanshi* or *shihan* (Sato, 1998). There is one leader in each school – the master. The rest are instructors and students of different ranks (older and younger, i.e. *senpai* and *kohai*). Professor Sato was himself a respected *sensei* with the highest master degree of 10 dan in *jujutsu*. He held the highest titles of *meijin* and *hanshi* and acted as the unquestioned leader of the IMAF, the International Martial Arts Federation based in Tokyo. He was also a strong opponent of participating in sports competitions. He only allowed competitions in technical forms, called *kata* in Japanese.

What socio-cultural conditions result in the martial arts environment often contrasting the role of the teacher (*sensei*) with the role of a sports trainer?

Institutional justification for the differences

Sport is a product of Western civilization. In its present form, it is connected with the Olympic ethos, the *fair play* canon, and most of all the functioning of a democratic, egalitarian society. This European tradition of equality causes the trainer in combat sports to become a hired instructor to perform a specific – and often quite explicit – task. Only the Olympic or national team coach enjoys greater esteem. In the era of extreme commercialization, the number one goal of an athlete and sports trainer is success in competitions, which usually translates into commercial success. In competitive sports, the trainer must focus on success in competition (*cf.* Kajtna & Doupona Topic, 2017).

The relationship between coaching skills and sports performance is well known (Czajkowski, 1994; Moen & Federici, 2013; Żukowski, 2013). This applies not only to the competences of a given trainer or coach, but also to his personality and style of team management (Dobrzeniecki, 1974; Czajkowski, 2008; Occhino et al., 2014). In martial arts, teacher-masters are often self-taught in the field of pedagogical and methodical knowledge, coming to some methods themselves through many years of experience and imitating their teachers. On the

Physical Culture and Sport. Studies and Research, 2020, 88, 41-48
DOI: 10.2478/pcssr-2020-0024

other hand, high-class sports trainers are usually well-trained in teaching methodologies, effective sports training, and rules of conduct in interpersonal relations (*cf*. Kurzawski, 1994; Werthner & Trudel, 2006; Moen & Federici, 2011, 2013; Lara-Bercial & Mallett, 2016).

Zbigniew Czajkowski (2008) distinguished five styles of managing a sports team in the trainer's work, namely: "imperious (dictatorial, authoritarian), superior, formal, cooperative (democratic) and friendly." He also clearly indicated (based on his long-term observation of the participating sports environment, especially fencing) that: "The best and effective management styles are cooperative and friendly" (Czajkowski, 2008, p. 73). In the case of sports trainers, the cooperative, democratic style seems to be the most effective. This is especially true since, as noted by Bogdan Berdel, the young athlete is often irritated by subordination to the coach. In martial arts, however, relationships have a slightly different character. Seniority and, on the other hand, the pursuit of non-aggression and harmony are more emphasized and respected (Berdel & Kawalec, 2003; *cf*. Cynarski & Berdel, 2000).

In sport, the authoritarian style appears relatively rarely, perhaps more often in sports that come directly from martial arts, such as *judo*. In some cases, the authoritarian style can lead to sporting success. But there is also the risk that a crisis could occur between the coach and a talented player, with negative emotions preventing effective cooperation. Feliks Stamm was a trainer of great authority who achieved a high status in his environment as well as social recognition and deserved fame not only because of the results of his mentees. He was both a teacher and a kind of father for the boxers he trained. So he was able to achieve a status akin to that of the great martial arts teachers. In this way, it is easier to apply the rules of teaching, enforce discipline, resolve possible conflicts, and achieve sports success (*cf*. Czajkowski, 2008; Arziutov et al., 2016).

As plenty of relationships of subordination exist in the hierarchical societies of Japan and Korea, these cultures have no problem recognizing the primary role of the *sensei* (Cynarski, 2016). The position of master-teacher is also sanctified there by tradition. *Shihan* is a "guide on the right path." Although various martial arts from East Asia have established institutions of social functioning in different ways, the teacher is usually like a father in a patriarchal family. In the case of *kung fu* schools, the term teacher-teacher (*sifu* or *shifu*) refers directly to the father in the family, which results from the social ethics of Confucianism that shaped Chinese society over the century. But the *sensei* is also a bit like a *guru* and guide; perhaps *guru* to a lesser extent as few of today's martial arts masters try to influence the spiritual development of their students (unless the martial arts teacher is also a clergyman, e.g. a Buddhist monk or Catholic priest). On the other hand, the role of a guide on the difficult road to the championship is probably an apt description of what students or their families expect from their *sensei*; that is his professional role, and in relation to the students, it is also his social role.

The trainer's personal formula is important for achievements in both sports (combat sports) and martial arts or martial ways (*cf*. Zuchora, 1971; Wolters, 2002; Szyszko-Bohusz, 2011; Cynarski, 2012; Johnson, 2017). However, in the traditionally understood ways of martial arts, its importance seems definitely more important. This is due to the social role of the martial arts master, i.e. a set of social expectations related to his position in the martial arts environment. It is a culturally determined difference. The master is therefore to be an educator and as such has relatively large pedagogical influence (Fredersdorf, 1986; Berdel & Kawalec, 2003; Cynarski & Lee-Barron, 2014).

Mastery in the traditionally understood way of martial arts does not require confirmation with the results of a sports competition. Thus, the goals are different than in combat sports. In addition, the responsibility is perhaps greater. The adept acquire combat tools, which are technical and tactical combat skills supported by a high level of physical fitness. The educational and training process is spread out over years. Gradually, self-defense skills are achieved in real combat situations, as are mental resilience, self-discipline, and self-control. The ways of martial arts are the art of humanity, and thus the main goal is to shape a good, socially valuable man. The teacher should just be an educator, showing the moral way and setting an example of its implementation (Cynarski, 2012; Martinkova, Parry, & Wagner, 2019).

Physical Culture and Sport. Studies and Research, 2020, 88, 41-48
DOI: 10.2478/pcssr-2020-0024

In the case of martial arts that have entered the path of sporting competition, the sharp contrast between the roles of the trainer and *sensei* is blurred. This applies, for example, to sports *jujutsu* and *karate* (in various forms and organizations), as well as sports *wushu, judo*, and *taekwondo*. The trainer here is both a trainer and a tutor. Also important is the fact that many martial arts organizations grant coaching licenses, meaning there is institutionalization in this area. Nevertheless, the master-teacher of a given martial art emphasizes that the sports aspect is only a small part of what he does. An example would be *shihan* Lesław Samitowski, 7 dan in *Kyokushin karate*, who takes on the role of trainer. However, he strongly emphasizes his role as a karate martial arts teacher, which is associated with martial arts medicine (Japanese *bujutsu ido*) and a special philosophy of life. The "Karate athlete" is not the same as the *karateka*, or "karate man" (Popko, 2019).

On the example of Samitowski, we can speak about the specific *karate* culture that originates from Okinawa and the former Kingdom of Ryukyu and is now assimilated in the processes of inculturation and internalization in enthusiastic environments on a global scale (*cf.* Piepiora et al., 2016). The culture of Old Japanese fencing and use of the Japanese saber, also known as the samurai sword, is disseminated similarly (*cf.* Sugino & Ito, 2010; Bennett, 2015; Mor-Stabilini, 2016). This applies to Chinese martial arts varieties that are studied and described in the context of entire cultural systems and socio-cultural functioning (*cf.* Lin, 2016; Guo, 2019). The group's relationship to the *sensei* is a relationship of subordination. The interaction is based on mutual trust and respect with the advantage of the master-teacher as the one who "knows better." On his part, this is the attitude of a demanding father who does not always tolerate the whims and fancies of children. In turn, he should lead his students to mastery, also broadly understood (i.e. not only in the realm of technicalities and sports).

In Japan and Korea, unlike in Western sport, physical performance is not a central value. It is similar with the meaning of competitions: in the West, sports competitions are a confirmation of effectiveness and often constitute a motive for exercise, while in *budō* they are rejected or transcendent – they become a medium of spiritual and bodily education (development) and do not constitute an autotelic value (Fredersdorf, 1986, pp. 123-239; *cf.* Johnson, 2017). The teacher's role is also different. The trainer feels responsible for the physical education of students, trains for success in competitions, and is involved in group dynamic processes between athletes, especially towards "sports champions." On the other hand, the martial arts master feels physically and morally responsible for each individual student; he presents the students with the goals of the "path" and the possibilities of full self-integration. The s*ensei* builds stable human relationships with his students, teaches and educates, and fulfills the function of paternity – admittedly with the autonomous authority of professionalism and spiritual power, but necessarily with the ambivalent attitude of a leader. According to Fredersdorf, by practicing *jūjutsu* (Japanese martial art) we gain openness in interpersonal contacts and tolerance for foreign patterns, willpower, courage, and an attitude of responsibility and honor. Practicing *budō* as a competitive sport is, according to him, a perversion.

Discussion

Generally, the development of interpersonal relations between the coach and player is the result of long-term and continuous communication based on cooperation, trust, and devotion. This allows for a favorable atmosphere and affects sports performance. For example, in swimming, coaches with more experience provide better support for athletes, are more dedicated, develop more positive personal relationships, and place fewer requirements on their athletes. In addition, as Liposek and Doupona Topic (2014) conclude, many young people quickly end their professional careers due to the high demands of a coach and the pressure placed on them to win, while other qualities of sports (maintaining good form, conquering fear, experiencing the joy of achieving a goal) should be more important.

Fredersdorf pointed out the contradiction of *budō* (Jap. martial arts path) with the spirit of the "rational society of the result (German: *Leistungsgesellschaft*)" (Fredersdorf, 1986, pp. 123-148; Dürckheim, 1975, p. 20). *Budō* for the Japanese is a cultural value involving cultivating traditions, ritual-religious practice, an escape from the

Physical Culture and Sport. Studies and Research, 2020, 88, 41-48
DOI: 10.2478/pcssr-2020-0024

brutal world of capitalism, and a way to develop fortitude. In the societies of Japan and Korea, and especially in the martial arts of these countries, there is a hierarchical system that determines the specificity of these martial arts. Seniority is based on internship in a given practice and the possession of a specific rank (degree, title). Above all, Frederic Fredersdorf drew attention to various theories of values, norms, consciousness, and goals that differentiated East Asian martial arts from Western sport (Fredersdorf, 1986, p. 126), which causes different motivations, expectations, and effects. In his opinion, among the central values of practicing martial arts are the pursuit of self-fulfillment and enlightenment, the practice of an art, and the practice of continuous exercise to achieve physical and spiritual unity. On the other hand, according to this German sociologist, the goals of sport in a broad sense are maintaining health, raising bodily possibilities, reducing mental tension, spending free time, improving bodily aesthetics, engaging in a relationship with nature, and entertainment and recreation, i.e. movement as a source of pleasure, etc.

Sterkowicz (2003), examining interpersonal relations in a group practicing *hapkido* (Korean martial art), showed a strong relationship between the status hierarchy and the level of special fitness – the best in this martial art were the most respected and well-liked. A similar relationship applies to masters-teachers who can impress with their masterly skill level. Older masters are more often impressed with knowledge and have great authority as living legends of martial arts. Significantly, in sports *judo* the coaches of this discipline from Japan have turned out to be largely Americanized, while the trainers from other countries have remained as if more under the spell of traditional Japanese culture (Matsumoto et al., 2001). The results of the indicated international comparative studies are evidence of cultural dialogues and exchanges, as well as the explosion and implosion of cultural patterns in the era of cultural globalization and localization. These patterns undergo some modifications, but a certain "hard core" determination of originality remains constant (*cf.* Cynarski, 2013).

There are also studies whose results cast doubt on the thesis about the clear difference between the roles of the trainer in combat sports and the master in martial arts. For example, a comparison was made of the hierarchy of the trainer's 20 professional activities in three martial arts (*capoeira, karate*, and *taekwon-do* ITF) and mixed martial arts (MMA). The results indicated that the differences between the weighted average of the professional activities of martial arts trainers (n = 182) and MMA trainers (n = 68) were not statistically significant (Bujak, Muntean, & Gierczuk, 2014, p. 35). After all, some features of an exemplary trainer are common to both martial arts and combat sports (Piórko, 2004; *cf.* Szyszko-Bohusz, 2011).

Conclusions

Reducing educational systems, which are the paths of martial arts, to oriental varieties of sports would be a serious factual mistake. Traditional sports are different, as are various forms of folk wrestling and similar ludic figures of physical culture. However, martial arts in the traditional understanding are fragments of the national cultural heritage of various countries and nations. Their teaching requires knowledge of the entire cultural systems from which they have originated. Therefore, a martial arts teacher should have a much broader competence than an instructor – a specialist in teaching methodology and sports training. Added to this is the spiritual dimension of the "warrior's path," which is constitutive of the definition of martial arts. This requires knowledge of the moral code, the tradition of the school, and the role of the tutor-guide through someone functioning as the *sensei*. The difference between the role of a sports trainer/coach and the role of a master in a given martial art is culturally determined. The master is to be a teacher and educator. This is due to the influence of the hierarchical culture and the ethos of the warrior preserved in martial arts.

Ethics approval and informed consent

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Social support and sports participation motivations of female adolescents in India - study of age transition and achievement level

Authors' contribution:
A) conception and design of the study
B) acquisition of data
C) analysis and interpretation of data
D) manuscript preparation
E) obtaining funding

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ABSTRACT

Motivation is likely a pivotal factor contributing to sports participation. In India, because of the unsupportive sports/physical education environment, girls participate less in sports and other physical activities than boys. Therefore, embedding a planned healthy environment with good social support may maximize and, consequently, increase their participation in various sports and physical activities. Considering this unabated dialogue and assuming that motivation is a pivotal need for female sports participation, this study examined the differences in motivation to participate in sports among female adolescents across three age categories: early (11–14 years old), middle (15–18 years old), and late (19–21 years old) adolescence. A total of 528 female adolescents from Assam, India participated in the study. Participation in physical education courses was the criterion for the participants, and they were invited to complete the Participation Motivation Questionnaire. A factor analysis with direct oblimin rotation using the maximum likelihood extraction method yielded a 23-item, five-factor structure that exhibited moderate internal consistency. An ANOVA revealed significant differences across all three age categories regarding all the extracted factors. Moreover, t-tests of all sub-factors identified significant differences between the two achievement levels of district-level and inter-district-level athletes. This study provides sound psychometric and comparative results that are useful for education and formative reviews in applied settings and research purposes. It also serves as a measurement tool for embedding motivation to participate in physical activities and sports among female adolescents and the development of strategic ideas to assist female adolescents from less privileged areas to experience healthy growth and a healthy lifestyle.

KEYWORDS

Female adolescent, perception of sports participation, age transition, sports achievement

Physical Culture and Sport. Studies and Research, 2020, 88, 49-67
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Introduction

The growing tendency toward sedentary behavior, which contributes to the increased prevalence of diabetes and various non-communicable diseases, has a significant effect on the gross national economy (Yesudian et al., 2014), people's quality of life (Verma & Dadarwal, 2017), and their well-being (Mercer, 2012; Debono, 2007). Related to the issue of sedentary behavior is the continuous decline in sports participation, especially among female adolescents, which has sparked debate among researchers (Eime et al., 2016; Scheerder, 2006; Strong et al., 2005). Researchers have struggled to find strategies to comprehend this problem, including conditions underpinning obesity and the hindrances it causes (Strong et al., 2005; Sherar, 2007; Australian Institute of Health and Welfare, 2010; Nielse et al., 2011).

Numerous studies have shown the benefits of regular participation in physical activity and sport, which significantly reduces the prevalence of various non-communicable diseases (Stalmatakis & Weiler, 2010; Ahmed et al., 2017, 2016; Sánchez et al., 2016). This study takes a look at the case of India; female adolescents from Assam were invited to participate in the research. India has the world's largest population of people between the ages of 10 and 24 years old (United Nations, Department of Economic and Social Affairs, Population Division, 2015). Yet, the subject of physical or sports education is not a well-respected subject in school teaching (Khandare, 2016; Singh, 2016). There are no concrete efforts to organize young people and encourage them to engage in playful competition. Sports participation remains a highly neglected area in schools (Khandare, 2016). The participation of females in sports comes to our attention in particular, as this is the area with the weakest support in this country. This research was conducted in the state of Assam, a state in northeastern India that is situated south of the eastern Himalayas. Bhandari and Chakraborty (2014) comment that the per capita income of Assam is among the lowest in the country, and it is estimated that its poverty rates are high in rural areas compared to urban areas. This research focuses on female adolescents in India in the Assam region. The findings may offer insight for assisting female adolescents from this less privileged area to be active. There is a long history on the development of feminism or gender studies in the West, but many parts of the world are not covered in this history (Pfister, 2017). It is important to conduct research on female adolescents in areas with economic or social difficulties and send a clear message that they have not been forgotten. Doing so will also help convey concrete strategies for how the system can address the issue of positive health outcomes for female youth. Health psychologists may have the knowledge to identify factors associated with female youth participation in organized sports and physical activity. The result may also be beneficial to not only the physical, social, and psychological development of females, but also their achievement-related and improved self-esteem and self-identity (Ahmed et al., 2014).

A conceptual understanding of sports and physical education in the Indian education system

Physical education (PE) is a non-compulsory subject in India. Nevertheless, it is necessary to have some further context in order to fully understand this statement. In practice, schools such as those enlisted in the Central Board of Secondary Education (CBSE), Indian Certificate of Secondary Education (ICSE), and Indian State Boards must offer PE as a subject in the curriculum. It is not compulsory for schools to implement this subject. The offering of this subject and PE attendance is sometimes purely the choice of the school or individual student, as most schools do not show interest in this subject and the students follow suit. Although it is not compulsory for students to participate in PE, schools located in urban areas are more likely to offer PE than those in rural and semi-rural areas. Participants in this research study were recruited from schools in the Assam region where PE is included as a formal subject in the academic curriculum. PE is defined as a "formal subject" in this study as it shares a similar status with the main curricular subjects (e.g., similar to math, science, and English). Additionally, the schools involved in the investigation have appointed and certified PE teacher(s) who deliver the PE curriculum. The PE departments of these schools provide opportunities for students to participate in various sports tournaments conducted by district sports offices and other associations/federations.

Physical Culture and Sport. Studies and Research, 2020, 88, 49-67
DOI: 10.2478/pcssr-2020-0025

Historically, since the beginning of Indian civilization, women have faced discrimination and have been in a disadvantaged position in society. Thus, they have rarely participated in games, sports, or other community health-related activities (Guttman, 1991). The current situation has resulted in few improvements. India is still a male-dominated society in many areas. In fact, despite having a female population of more than 1.2 billion, few female sports icons represent India or strive to enhance the country's presence in various international competitions. While many countries are considering the globalization of sports, Indian professionals are encountering the challenge of adopting PE as a compulsory subject in schools. Problems associated with PE directly and indirectly lower children's level of motivation to participate in physical activity and sports. Among these problems are Indians' many misconceptions of PE, including the following: PE is considered a rest period between academic classes; PE can be used for completing homework in other subjects; and only academically weak (unintelligent) students opt to take this subject. Misconceptions specific to female participation in PE are: PE negatively affects girls' reproductive organs during pregnancy; girls lose their virginity when taking PE; PE may disfigure their bodies; PE involves masculine tasks and girls should be confined to home activities and display taciturn behaviors; and participation in PE allows girls to have more contact/communication with boys and thus confuses their feelings towards marriage (Husan, 2015; Abder-Rahman, 2009; United Nations Division for the Advancement of Women, Department of Economic and Social Affairs, 2007). PE is rarely recognized as a foundational course in schools that contributes to the overall development of the mind and body of the student.

Aims of the study

Sports participation is a personal choice among Indian children, as they rarely receive external motivation that increases their desire to participate in sports, given the unsupportive environment (Husan, 2015; Layak & Aravind, 2017). Such an environment is created by the fact that PE is a non-compulsory subject and does not have equal status with other subjects. A literature review shows that self-motivation is positively related to sustaining students' participation in physical activity and sports (Calvo et al., 2010; Teixeira et al., 2012). Moreover, this research emphasizes that the reasons for participating (or not participating) in sports are multiple and diverse (Fraser-Thomas et al., 2008; Murcia et al., 2010; Beni et al., 2017). Sustaining children's level of motivation is important and depends on their experience participating in sports activities, including whether or not they had fun, developed skills, learned something, spent time with friends, experienced success, and improved their health (Murcia et al., 2010). Sherar et al. (2007) reveal that physical activity levels decrease as age increases. Iannotti et al. (2012) examined students aged 11, 13, and 15 years old across seven countries and found that the association between physical activity and health motivation varied significantly by region and gender. In fact, experiencing enjoyment and achieving goals through sports are unique features of quality PE (Ho et al., 2017a, 2018, 2019a, 2019b). Similarly, enjoying participation in sports activates positive feelings, such as pleasure (Beni et al., 2017). Therefore, this study investigates the differences in adolescent females' motivation to participate in sports among multiple age groups and levels of achievement. The area of Assam is selected in this study as the research team expects to determine the best strategy for assisting female adolescents from less privileged areas so that they may experience healthy growth and a healthy lifestyle.

Theoretical background

Matsumoto and Takenaka (2004) highlight the important role of motivation required for both recreational and competitive sports. Motivation is considered a predictor of future involvement in sports (Iso-Ahola & St. Clair, 2000). In addition to various health benefits, motivation is defined as a strong desire, wish, or powerful stimulus that comes from within a person to propel him/her towards achieving a goal.. Self-determination theory (SDT; Deci & Ryan, 1985, 2000) is a motivational framework based on people's three psychological needs: perception of competence, relatedness, and autonomy (Deci & Ryan, 1985). These needs are closely related to intrinsic

Physical Culture and Sport. Studies and Research, 2020, 88, 49-67
DOI: 10.2478/pcssr-2020-0025

motivation and psychological health. The perception of competence signifies one's personal capabilities. Autonomy indicates one's own needs and value system. Relatedness reflects one's perceptions of personal connections, thereby creating an individual's interpersonal environment (Deci & Ryan, 1985). SDT assumes that motivation for sports participation is multidimensional and, as such, consists of intrinsic, extrinsic, and motivational factors (Deci & Ryan, 1985). Research on SDT areas (e.g., PE, sports, exercise, and physical activities) that examines individuals' basic needs has recently garnered significant interest (Pedro et al., 2012; Fortier et al., 2007; Silva et al., 2006). SDT (Deci & Ryan, 1985) and the achievement goal theory (AGT; Nicholls, 1989) frameworks have been applied successfully to the contexts of physical activity and sports engagement among different age groups, including youth and adults (Fenton et al., 2017; Ahmed et al., 2016; Ho et al., 2017b, 2019c). Bosnar and Balent (2009) found that motivation is associated with multiple engagement motives and different types of motivation. Moreover, SDT has been applied successfully to intervention research within the PE context to manipulate the psychological needs of youth, thereby increasing specific targeted behaviors such as physical activity, PE enjoyment, and a sense of autonomy (Lonsdale et al., 2013, 2009; Ward et al., 2008). For girls specifically, researchers have highlighted the need for relatedness as an important aspect in their physical activity participation and engagement in PE (Pfaeffli & Gibbons, 2010; Shen et al., 2012). For example, Shen et al. (2012) reported that girls with a high sense of relatedness (including their connections to teachers and peers) were more likely to show enthusiastic participation and effort in PE class.

Hypothesis formulation based on the literature review

Research on sports motivation is rare in India, and results on female sports motivation are inconclusive. Piri et al. (2014) observed 350 male and female students and found that the level of motivation towards sports participation was higher among the latter than the former. Similarly, Bastos, Gonzalez, and Marquez (2006) examined 100 male and 130 female Brazilian adults and revealed that the latter were more associated with aesthetic and health motivations, whereas the former participated for social reasons. Significant increases in health interest (Sherar et al., 2008) and psychological perspectives (Clark et al., 2011) have been related to the active sports participation of children and adolescents. This identified interest in such a pursuit highlights the decreasing level of physical activity and sports participation with age, particularly during adolescence among females compared with their male counterparts (Trost et al., 2008; Whitehead & Biddle, 2008). Surprisingly, the World Health Organization (World Health Organization, 2008) found that 11- to 15-year-old girls are less active than their male counterparts. The transition of children from primary to secondary school is a crucial stage that influences sports participation significantly. However, fewer studies have investigated factors that deter them from continuous involvement in health and health-promoting activities (Humbert et al., 2008). In conjunction, motivation is a strong predictor of the active enhancement of youth involvement in sports. Therefore, sports psychologists have investigated motives behind sports participation to reduce high dropout rates (Sarrazin, Boiché, & Pelletier, 2007). The Environment, Communications, Information Technology and the Arts References Committee (2006) revealed that a 50% dropout rate from sports occurs between 5 and 10 years of age among girls. However, existing literature has shown that children have yet to obtain the desired health benefits and enjoyment based on their participation (Lutz et al., 2008; Strel & Sila, 2010), which warrants future research to understand the different reasons for participating in and withdrawing from sports and physical activity (Kondrič et al., 2013). Bauman et al. (2009) indicated that male students reported higher levels of physical activity than their female counterparts in 17 of 20 countries studied. The prevalence of low physical activity ranged from 7% to 41% among males and from 6% to 49% among females.

Therefore, this study hypothesized that: H_1: Significant differences in motivation to participate in sports activities exist across all age categories; H_2: Significant differences in motivation to participate exist across students with different levels of achievement, namely, district-level (DL) vs. inter-district level (IDL). The

Physical Culture and Sport. Studies and Research, 2020, 88, 49-67
DOI: 10.2478/pcssr-2020-0025

three-fold task of this study was to establish the 1) latent structure of athletes' motivational types, 2) differences in motivation to participate in sports activities among female adolescents from three age categories, and 3) differences in motivation to participate in sports activities based on level of achievement.

Methods

Participants

Institutional permission to conduct this study was obtained. Data were collected from schools where PE was presented as a formal subject. A stratified random sample of 528 female adolescents (age: 16.72 ± 0.617) from different schools in Assam, India participated in this study. The sample was stratified across participants' choice to attend PE classes at the various institutions. Participants were also members of various sports clubs, including cricket (n = 127, 24.1%), football (n = 65, 12.3%), badminton (n = 36, 6.8%), lawn tennis (n = 68, 12.9%), swimming (n = 89, 16.9%), and athletics (n = 143, 27.1%). These individuals regularly participated in school-level tournaments conducted by the district office under the Directorate of Sports in Assam. Participants were categorized into three age groups according to Steinberg's (1993) developmental approach to adolescents: early adolescence (11–14 years old), middle adolescence (15–18 years old), and late adolescence (19–21 years old).

Table 1 presents descriptive statistics of the age categories, including number of participants in each category and means and standard deviations of age groups for female participants and the total sample. Data were collected during a PE class for each group.

Table 1. Descriptive statistics of the age categories: Early, middle, and late adolescence

Age Categories	Number of female athletes		Age Mean ± SD
			Mean ± SD
Early Adolescent Students (11–14 years)	173	(32.8%)	13.32 ±.755
Middle Adolescent Students (15–18 years)	190	(36%)	17.40 ±.453
Late Adolescent Students (19–21 years)	165	(31.2%)	19.51 ±.817
Total	528	(100%)	16.72 ± 2.61

Instruments

This study used Gill et al.'s (1983) 30-item Participation Motivation Questionnaire (PMQ). The PMQ has been used widely in several studies on motives for participation in youth sports. Participants completed the PMQ (Gill et al., 1983), which includes lists of possible reasons for students' participation in sports. Respondents used a 5-point Likert scale, ranging from 1 (not at all important) to 5 (extremely important) to respond to items, such as "I participate in sports because it is…"

Results from a factor analysis of the PMQ revealed that achievement/status, team atmosphere, fitness, energy release, skill development, friendship, and fun are basic motives for student participation in sports activities (Gill et al., 1983). Zahariadis et al. (2005) identified six motivational factors as reasons for students to engage in physical activities (Kondrič, et al., 2013). These reasons are skill development and competition (Cronbach's α reliability = 0.89), status/recognition (α = 0.85), energy release (α = 0.77), team atmosphere (α = 0.82), friendship and social interaction (α = 0.63), and fitness (α = 0.83). Kondrič, et al., (2013) found six factors that motivate adolescents to participate in sports activities: sports activities with friends (α = 0.868), popularity (α = 0.877), fitness and health (α = 0.856), social status (α = 0.765), sports events (α = 0.568), and relaxation (α = 0.572).

Physical Culture and Sport. Studies and Research, 2020, 88, 49-67
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Data analyses

Data were analyzed using the IBM SPSS (20.00). Basic descriptive statistics (i.e., means, standard deviations, and frequencies) were calculated. A factor analysis using the maximum likelihood method with direct oblimin rotation was performed for all PMQ items. A one-way ANOVA was performed to determine the differences among students based on three age categories – early (11–14 years old), middle (15–18 years old), and late (19–21 years old) adolescence – for each of the factors identified via the factor analysis. Mean comparisons of age categories were determined using a one-way ANOVA and Scheffé's post-hoc test for unequal samples to gain insight into the individual differences among students of different institutions with regard to the motivational structure of participating in a physical activity (sport). Moreover, t-tests were computed to examine the differences between levels of achievement.

Results

Table 2 shows the descriptive statistics (means and standard deviations) for each item on the PMQ for each age group and the total sample. Motives for participating in physical activity that stood out were items 15–17: participants' enjoyment of exercise (2.08 ± 0.643), having something to do (2.10 ± 0.645), and the action it provides (2.11 ± 0.640). However, because an analysis at the item level was too broad and did not provide synthesis, a factor analysis was conducted on all items to reduce them to their underlying structure.

Table 2. Descriptive statistics for all by age category according to the Participation Motivation Questionnaire

No.	Description of the items	Early 11–14 years (n=173)	Middle 15–18 years (n=190)	Late 19–21 years (n=165)	Total Sample (N=528)
		Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
1	I want to improve my skills	1.62 ±.593	1.45 ±.670	1.37 ±.485	1.48 ±.600
2	I want to be with my friends	1.31 ±.525	1.36 ±.544	1.46 ±.546	1.37 ±.541
3	I like to win	1.19 ±.440	1.24 ±.467	1.40 ±.560	1.27 ±.496
4	I want to get rid of energy	1.15 ±.379	1.17 ±.435	1.32 ±.495	1.21 ±.444
5	I like to travel	1.18 ±.431	1.15 ±.402	1.31 ±.491	1.21 ±.445
6	I want to stay in shape	1.18 ±.418	1.21 ±.457	1.44 ±.608	1.27 ±.511
7	I like the excitement	1.47 ±.624	1.32 ±.521	1.45 ±.609	1.41 ±.587
8	I like the teamwork	1.57 ±.620	1.38 ±.529	1.52 ±.590	1.49 ±.584
9	My parents or close friends want me to play	1.43 ±.531	1.34 ±.509	1.45 ±.619	1.41 ±.554
10	I want to learn new skills	1.45 ±.554	1.40 ±.552	1.53 ±.619	1.46 ±.576
11	I like to meet new friends	1.40 ±.537	1.37 ±.536	1.47 ±.649	1.41 ±.575
12	I like to do something I'm good at	1.38 ±.498	1.30 ±.470	1.47 ±.569	1.38 ±.516
13	I want to release tension	1.54 ±.574	1.35 ±.491	1.55 ±.628	1.48 ±.570
14	I like the rewards	1.31 ±.536	1.44 ±.638	1.62 ±.637	1.46 ±.617
15	I like to get exercise	2.10 ±.575	2.09 ±.691	2.04 ±.656	2.08 ±.643
16	I like to have something to do	2.13 ±.553	2.15 ±.714	2.00 ±.643	2.10 ±.645
17	I like the action	2.13 ±.563	2.12 ±.693	2.07 ±.653	2.11 ±.640
18	I like the team spirit	1.73 ±.681	1.90 ±.659	1.93 ±.659	1.85 ±.671
19	I like to get out of the house	2.02 ±.570	1.94 ±.631	1.98 ±.666	1.98 ±.623
20	I like to compete	1.99 ±.575	1.98 ±.755	1.87 ±.606	1.95 ±.656
21	I like to feel important	1.91 ±.575	2.03 ±.704	1.87 ±.606	1.94 ±.636
22	I like being on a team	1.92 ±.517	1.96 ±.733	1.89 ±.640	1.93 ±.639
23	I want to go on to a higher level	1.98 ±.533	2.06 ±.659	1.81 ±.649	1.96 ±.625
24	I want to be physically fit	2.02 ±.564	1.98 ±.617	1.83 ±.659	1.95 ±.618
25	I want to be popular	1.42 ±.581	1.26 ±.497	1.07 ±.260	1.25 ±.489
26	I like the challenge	1.06 ±.244	1.16 ±.375	1.25 ±.450	1.16 ±.372
27	I like the coaches or instructors	1.12 ±.351	1.24 ±.497	1.38 ±.511	1.24 ±.470
28	I want to gain status or recognition	1.08 ±.282	1.21 ±.460	1.22 ±.446	1.17 ±.410
29	I like to have fun	1.11 ±.320	1.17 ±.419	1.20 ±.416	1.16 ±.389
30	I like to use the equipment or facilities	1.13 ±.346	1.13 ±.401	1.17 ±.397	1.14 ±.382

Physical Culture and Sport. Studies and Research, 2020, 88, 49-67
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To define the latent motivational structure of all respondents in a better way, a maximum likelihood analysis (factor analysis) with a direct oblimin rotation was used. A high Kaiser-Meyer-Olkin measure of sampling adequacy (MSA) value (0.863) and a significant Bartlett's test of sphericity (approximate chi-square 4774.957, df = 253, p <0.001) confirmed the factorability of the items. Several criteria, including the differences between adjacent eigenvalues, a scree plot, and differences in the percentage of variance explained, were used to determine the number of factors (Table 3). Five significant factors that explained 50.23% of the variance were extracted. The purpose was to account for the adjacent factors and, more importantly, to consider the factor structure.

Underlying structure of athletes' motivation to participate

The MSA is an index used to quantify the degree of inter-correlation among items and appropriateness of factor analysis. A value above 0.50 for either the entire matrix or an individual variable indicates the appropriateness of acceptance (Field, 2000). The results of the factor analysis are presented in Table 3. All items with factor loadings greater than 0.50 were retained. When the pattern matrix (factor and structure matrices were considered because of cross-loading) was considered, four subscales were determined as retaining and reflecting the conceptual framework. Of the 30 items, 7 with low factor loadings were excluded from the analysis. Therefore, the original set of 30 items was reduced to 23 items, which are listed in Table 3 for reference.

All factors showed acceptable to high internal consistency with Cronbach's alpha scores between 0.754 and 0.865. Factor 1 (i.e., sports action with friends) had a high eigenvalue (5.81) and explained 25.27% of the variance. Items in this factor expressed enjoyment from exercise and pleasure with having an active lifestyle with friends. The main projections of the statements offered in the questionnaire regarding this factor were related to action and friendship. This factor included motives such as "I like the teamwork," "My parents or close friends want me to play," "I like to meet new friends," and "I want to be with my friends."

Factor 2 (i.e., fitness and health) explained 15.35% of the variance and had a high eigenvalue (3.27). Items in this factor expressed the enjoyment achieved from fitness and various health consequences associated with exercise. This factor was defined by intrinsic motives related to good health and included items such as "I like to have something to do," "I like to exercise," and "I like action." Both intrinsic and extrinsic motivations contribute to this factor because student athletes are motivated by competition and social approval (Bosnar & Balent, 2009).

Items in factor 3 (i.e., social status) expressed enjoyment from participation in physical activity and associated social recognition. Factor 3 had an eigenvalue of 2.08 and explained 9.05% of the variance. It was defined by statements such as "I like to have fun," "I like to use the equipment or facilities," and "I want to gain status or recognition."

Items in factor 4 (i.e., popularity) expressed the feelings of importance associated with performance and success in physical activity. This factor referred to the sense of importance that physically active people achieve through sports, such as "I like to feel important," "I want to go on to a higher level," "I like being on a team," "I like to compete," "I like to get out of the house," and "I want to be physically fit." It explained 5.98% of the variance and had an eigenvalue of 1.37.

The last factor (i.e., energy release) explained 4.88% of the variance and had an eigenvalue of 1.12. This factor was defined by statements such as "I like to travel," "I want to stay in shape," and "I want to get rid of energy."

The PMQ was adapted and administered to participants in various sports fields (Trembath et al., 2002), athletes (Kondrič, 2013), participants in various physical activities (Kolt et al., 2004), and students in PE settings (Zahariadis & Biddle, 2000). Hence, the number of factors and component items identified through the factor analysis have varied levels of dependency on the sample under investigation (Gill et al., 1983). This conclusion is evident in this study.

Physical Culture and Sport. Studies and Research, 2020, 88, 49-67
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Moreover, factor 1 (sports action with friends) recorded the highest mean (12.92 ± 3.54), indicating that students perceived it as the most important motivation for physical activity in developing quality PE programs. Factor 4 (popularity, 9.74 ± 2.33) and factor 2 (fitness and health, 6.29 ± 1.68) came next. Factor 5 (energy release, 3.70 ± 1.18) and factor 3 (social status, 3.48 ± 0.968) had the lowest mean scores, indicating that they were perceived to be less important motivating factors than the three aforementioned factors.

Table 3. Factor structure of the Participation Motivation Questionnaire for students from three age categories of the adolescent period (Maximum Likelihood, Direct Oblimin Rotation)

Items	**Description of the items**	***Factor 1 Sports Action with Friends***	***Factor 2 Fitness and Health***	***Factor 3 Social Status***	***Factor 4 Popularity***	***Factor 5 Energy Release***	
		1	2	3	4	5	*h*
Item8	I like the teamwork	.695					*.302*
Item12	I like to do something I'm good at	.667					*.483*
Item10	I want to learn new skills	.665					*.599*
Item13	I want to release tension	.660					*.658*
Item9	My parents or close friends want me to play	.609					*.486*
Item7	I like the excitement	.587					*.517*
Item1	I want to improve my skills	.566					*.487*
Item11	I like to meet new friends	.553					*.550*
Item2	I want to be with my friends	.455					*.401*
Item16	I like to have something to do		.860				*.510*
Item15	I like to get exercise		.782				*.498*
Item17	I like the action		.738				*.654*
Item29	I like to have fun			.780			*.741*
Item30	I like to use the equipment or facilities			.719			*.586*
Item28	I want to gain status or recognition			.645			*.400*
Item21	I like to feel important				.742		*.532*
Item23	I want to go on to a higher level				.706		*.413*
Item22	I like being on a team				.651		*.505*
Item24	I want to be physically fit				.556		*.357*
Item20	I like to compete				.537		*.436*
Item5	I like to travel					.679	*.611*
Item6	I want to stay in shape					.655	*.536*
Item4	I want to get rid of energy					.567	*.290*
	Factor mean	12.92	6.29	3.48	9.74	3.70	
	Factor standard deviation	3.54	1.68	.968	2.33	1.18	
	Cronbach's alpha	.865	.844	.754	.786	.801	
	Scale variance	12.57	2.83	.937	5.43	1.41	
	Eigenvalues	5.81	3.53	2.08	1.37	1.12	
	Variance explained (%)	25.27	15.35	9.05	5.98	4.88	
	Items	9	3	3	5	3	

Extraction Method: Maximum Likelihood.
Rotation Method: Oblimin with Kaiser Normalization. a. Rotation converged in 11 iterations.

The results of the factor analysis indicated that the 23 items on the final version of the questionnaire demonstrated sound and satisfactory inter-correlation results. The inter-correlations among the four factors are presented in Table 4. All factors showed weak correlations with one another, ranging from -0.026 to 0.501, with an average of 1.25, suggesting that the identified motivation factors were relatively independent of each other. The high reliability scores (i.e., internal consistency) for all factors indicated that the items were consistent

Physical Culture and Sport. Studies and Research, 2020, 88, 49-67
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within each factor and the factors were consistent within the model, thereby permitting additional meaningful analysis.

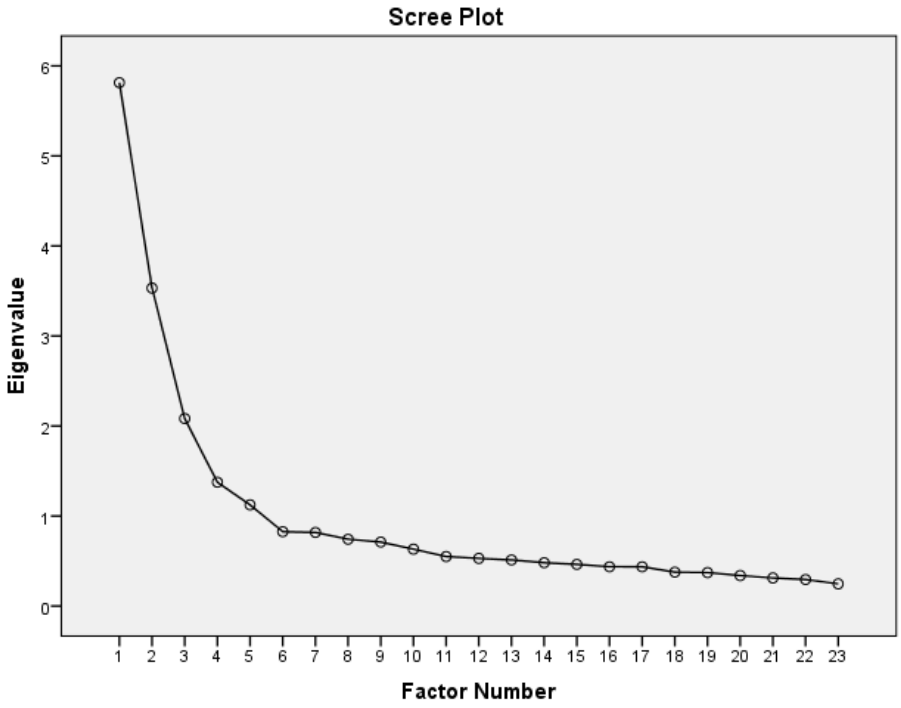

Figure 1. Scree plot depiction

A confirmatory factor analysis (CFA) using AMOS 21.00 (IBM) was conducted to examine the retained five-factor structure from the exploratory factor analysis. The same dataset was used to determine the robustness of the analysis process, the psychometric properties of the retained factors, and the excluded items (Byrne & Watkins, 2003). The overall model fit was evaluated using multiple goodness-of-fit indices, including the chi-square value, comparative fit index (CFI), Bentler-Bonett normed fit index (NFI), *parsimony comparative fit index* (PCFI), and root mean square error of approximation (RMSEA), using a 90% confidence interval (90% CI). Although much debate surrounds the selection of precise thresholds of fit, which is especially relevant within the field of theory-based multi-item/factor CFA testing (see Marsh, Hau, & Wen, 2004), thresholds greater than 0.90, close to or less than 0.08 (Bentler, 1995), and up to 0.08 (Browne & Cudeck, 1993; Bollen, 1989) are commonly accepted for CFI and RMSEA as indicative of acceptable model fit.

Table 4. Factor correlation matrix

Factor		1	2	3	4	5
1	Sports Action with Friends	1.000	.050	.032	.300	.475
2	Fitness and Health		1.000	-.030	.501	-.096
3	Social Status			1.000	.027	.018
4	Popularity				1.000	-.026
5	Energy Release					1.000

Extraction Method: Maximum Likelihood.
Rotation Method: Oblimin with Kaiser Normalization.

Physical Culture and Sport. Studies and Research, 2020, 88, 49-67
DOI: 10.2478/pcssr-2020-0025

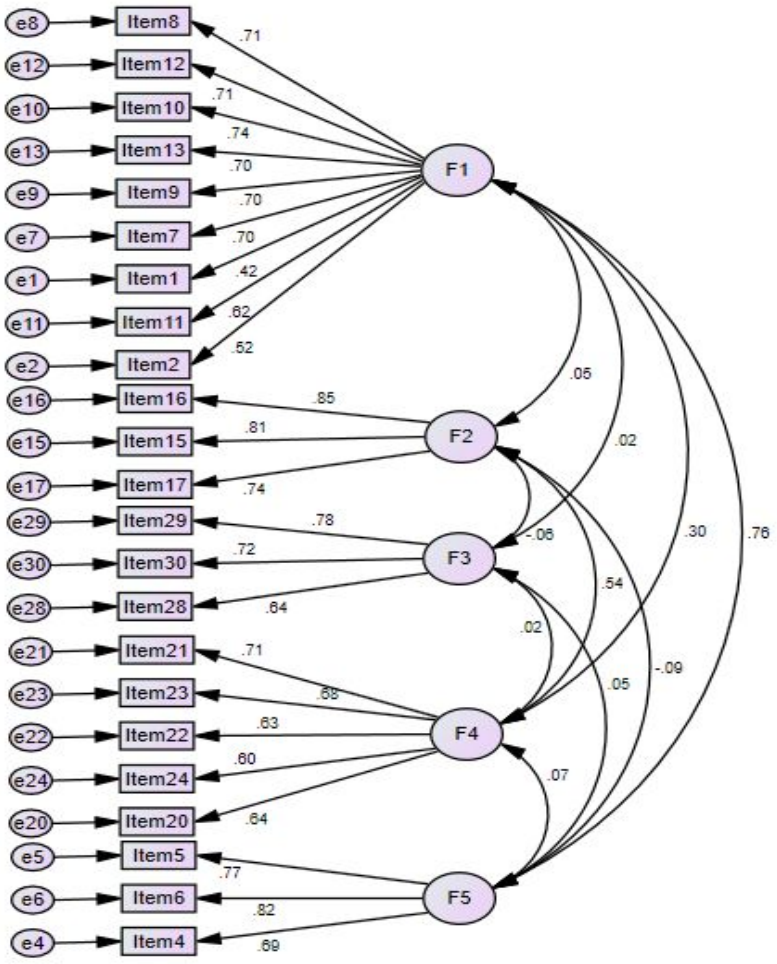

Figure 2. Measurement model
Note: Factor 1: Sports Action with Friends; Factor 2: Fitness and Health; Factor 3: Social Status; Factor 4: Popularity; and Factor 5: Energy Release.

To verify the retained factors' item loadings, a measurement model was evaluated using multiple goodness-of-fit indices, including the chi-square value, CFI, NFI, PCFI, and RMSEA, using a 90% confidence interval (90% CI). The results of the robust CFA using the maximum likelihood estimation method (see Table 5) suggested that the five-factor model provided an adequate fit to the data.

Table 5. Model fit indices for data collected using the PMQ

Properties	Model H0
N	528
CMIN	575.200
DF	220
CMIN/DF	2.615
CFI	.922
TLI	.903
NFI	.881
PCFI	.735
RMSEA	.054

Physical Culture and Sport. Studies and Research, 2020, 88, 49-67
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Table 6. Age group (early, middle, and late adolescence) (ANOVA) differences regarding motivation for physical activity

	Early Adolescents (11–14 years)	**Middle Adolescents (15–18 years)**	**Late Adolescents (19–21 years)**			
Factor	Mean ± SD	Mean ± SD	Mean ± SD	F	Sig.	Eta square
Sports Action with Friends	13.22 ± 3.08	12.30 ± 3.56	13.31 ± 3.88	4.582	.011	.017
Fitness and Health	6.38 ± 1.50	6.37 ± 1.80	6.12 ± 1.71	1.346	.261	.005
Social Status	3.34 ± .795	3.52 ± 1.11	3.60 ± .935	3.274	.039	.012
Popularity	9.84 ± 2.01	10.04 ± 2.58	9.28 ± 2.28	5.060	.007	.018
Energy Release	3.52 ± 1.08	3.54 ± 1.12	4.09 ± 1.27	13.034	.000	.047

* The mean difference is significant at the 0.05 level.

Participants were divided into three age groups: early (11–14 years old), middle (15–18 years old), and late (19–21 years old) adolescence. Age group differences were calculated for the three age groups and are presented in Table 6. A one-way between-groups ANOVA was conducted to explore age-group differences for the five factors of perceived motivation for physical activity. Significant differences were found for four of the perceived motivations: sports action with friends ($F(2, 525) = 4.58$, $p = 0.011$), social status ($F(2, 525) = 3.27$, $p = 0.039$), popularity ($F(2, 525) = 5.06$, $p = 0.007$), and energy release ($F(2, 525) = 13.03$, $p = 0.000$). Fitness and health ($F(2, 525) = 1.34$, $p = 0.000$) did not show any significant differences across the three age groups. Differences among the groups were small, despite their significance. The effect sizes of the four factors were small, with eta squared being equal to 0.017, 0.012, 0.018, and 0.047, respectively. Post-hoc comparisons using Scheffé's test indicated that the difference for sports action with friends occurred between middle (M = 12.30 ± 3.56) and early (M = 13.22 ± 3.08) adolescence. Moreover, social status was a stronger motivating factor for physical activity during late adolescence (M = 3.60 ± 0.935) than middle (M = 3.52 ± 1.11) and early (6.38 ± 1.50) adolescence. However, popularity was a stronger motivating factor for physical activity during middle adolescence (M = 10.04 ± 2.58) than early (M = 9.84 ± 2.01) and late (M = 9.28 ± 2.28) adolescence. Scheffé's post-hoc test also indicated that energy release is a much stronger motivating factor during middle adolescence (M = 3.54 ± 1.12) than early (M = 4.09 ± 1.27) or late (M = 3.52 ± 1.08) adolescence. No significant differences were found among the age groups regarding fitness and health as a motivating factor for physical activity.

Table 7. Level of achievements' differences regarding the motivation for physical activity

	District Level (DL) (N=253)	Inter-District Level (IDL) (N=275)	t-test for Equality of Means				
			t	Mean Difference	Sig. (2-tailed)	Std. Error Difference	Eta squared
Sports Action with Friends	13.27 ± 3.36	12.59 ± 3.68	2.21	.680	.028	.307	0.19
Fitness and Health	6.53 ± 1.51	6.08 ± 1.79	3.14	.457	.002	.145	0.27
Social Status	3.28 ± .748	3.68 ± 1.10	-4.83	-.399	.000	.082	0.42
Popularity	10.10 ± 2.42	9.41 ± 2.19	3.42	.688	.001	.201	0.29
Energy Release	3.53 ± 1.13	3.86 ± 1.21	-3.27	-.335	.001	.102	0.28

Note: Cohen (1977) classifies .01 as a small effect, .06 as a medium effect, and .14 as a large effect.

Differences based on level of achievement were calculated using an independent-samples t-test for all five of the perceived motivational factors. The results are displayed in Table 7. Significant differences were found in all extracted sub-factors: sports action with friends DL (M = 13.27 ± 3.36) and IDL (M = 12.59 ± 3.68; $t(526) = 2.21$, $p = 0.028$, two-tailed), fitness and health DL (M = 6.53 ± 1.51) and IDL (M = 6.08 ± 1.79; $t(526) = 3.14$, $p = 0.002$, two-tailed), social status DL (M = 3.28 ± 0.748) and IDL (M = 3.68 ± 1.10; $t(526) = -4.83$, $p = 0.000$,

Physical Culture and Sport. Studies and Research, 2020, 88, 49-67
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two-tailed), popularity DL (M = 10.10 ± 2.42) and IDL (M = 9.41 ± 2.19; t(526) = 3.42, p = 0.001, two-tailed), and energy release DL (M = 3.53 ± 1.13) and IDL (M = 3.86 ± 1.21; t(526) = -3.27, p = 0.001, two-tailed).

Discussion

The risk of non-communicable diseases is the outcome of sedentary activities and has become a major concern among nations, including India (Lee et al., 2012). To address this crisis and sustain an active lifestyle, regular participation in sports and physical activities is recommended (Lee et al., 2012). The promotion of healthy habits such as regular exercise can greatly affect and influence one's personality. Embedding healthy habits into one's lifestyle during adolescence is essential for healthy entry into adulthood because this is regarded as a critical age for development. Therefore, sports participation is linked to motivation for predicting long-term participation in sports and physical activity.

The first aim of this study was to assess factors that underpin the motivation to participate in sports among Indian adolescent girls. Kondrič et al. (2013) investigated motivational differences among athletes using a cross-cultural (Slovenia, Croatia, and Germany) study and yielded six factors on the PMQ. By contrast, this study yielded five factors that determined the broad dimension of sports participation motivation among adolescent girls in India. Kondrič et al. (2013) used a principal component analysis, whereas this study employed the robust maximum likelihood analysis because it possesses the unique feature of identifying minimum variance unbiased estimators as the sample size increases. The use of this method could be attributed to the 23 items and five factors that were retained in the analysis. The extracted five factors were estimated through structural equation modelling, which is a priority recommendation in Kondrič et al. (2013). The result of the CFA provided sound psychometric properties with an RMSEA of 0.054 and a CFI of 0.922, including satisfactory reliability scores. In addition to these adequate psychometric properties, high reliability (i.e., internal consistency) scores for all factors indicated that the items were consistent within each factor and that the factors were consistent within the model, thereby permitting further meaningful analysis.

The secondary aim of this study was to investigate the differences in the level of motivation among girls in early, middle, and late adolescence (Steinberg, 1993). Small but significant differences were identified among the age groups with regard to three of the perceived motivational factors. Late adolescents showed higher means on the sub-factors of sports action with friends and social status factors compared with early and middle adolescents. Sports action with friends was the stronger motivational factor with respect to physical activity during late adolescence than in early and middle adolescence.

Participating in any sport or physical activity with peers (Macphail, Gorely, & Kirk, 2003) has been shown to be enjoyable (Allender, Cowburn, & Foster, 2006) and enhance engagement in an active lifestyle (Light et al., 2013). This participation could be the reason the "sports action with friends" factor showed a greater mean among late adolescents. Maturo and Cunningham (2013) also provided concrete evidence on how friendship influences physical activity during childhood. In other words, their study provided strong evidence showing how receiving encouragement from friends and engagement in physical activity with friends, along with those friends' own participation in physical activity, creates a strong relationship, maximizing children's participation in physical activity. Moreover, during late adolescence, individuals tend to engage in various gregarious activities that provide ample opportunities to develop sports and health-related performances. This factor included items such as "I like action," "I like teamwork," I like to do something I'm good at," "I want to learn new skills," "I like the excitement," "I want to improve my skills," and "I like to meet new friends." In the context of the descriptions of the extracted items, the current results are consistent with Maturo and Cunningham (2013) because their study recommended that exercise with peer groups should be imbedded firmly to enhance active living and lifelong healthy habits. Similarly, family and friends play a strong role in influencing decisions and maintaining participation in sports (Students of So285 Section 1, Fall 20141 & Garcia, 2015). Our findings are also aligned with theories of adolescence, suggesting that the influence of one's social life and friendships

Physical Culture and Sport. Studies and Research, 2020, 88, 49-67
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becomes more significant for older adolescents than the family influences present during early childhood (Coleman & Hendry, 1999).

The finding on late adolescents showing a higher social status mean level indicates that children seek special status in society as they grow based on their productive outputs. Social status refers to the perception of being admired or accepted by one's friends (Bukowski & Hoza, 1989). This finding is highly attributed to athletes' profuse interest and motivation in sports participation and the success upon which they expect their performances should be valued and credited among their peers and in society (Goldberg & Chandler, 1989; Kane, 1988; Thirer & Wright, 1985). Additionally, the middle adolescent cohort reported a higher mean on the "popularity" factor. The term "social status" is likely often used interchangeably with popularity (Chase & Machida, 2011). Finding popularity as a vital factor that determines motivation towards sports has high relevance regarding how athletic participation and its success become prevalent among middle adolescents. This finding supports Buchanan et al. (1976) and Kane (1988), who reported that sports play a substantial role in determining social status for girls and boys. However, their study also showed that boys are more inclined towards athletic participation than girls. Similarly, White (1995) examined collegiate male and female athletes and highlighted having higher athletic participation, which enhances competitiveness, career opportunities, and social status. Therefore, creating an in-depth gender-based understanding of athletic participation and its influence on popularity or social status requires additional research. Reports of higher means regarding the "energy release" factor among late adolescent athletes are attributed to athletes' extreme interest in and enjoyment of participating in sports. This study's findings support Students of So285 Section 1, Fall 20141 and Garcia's (2015) qualitative study in which one interviewee said: "I am very competitive when I play sports and pretty competitive in general. I like to keep playing sports to get rid of some of that competitive energy."

The third aim of this study was to investigate the differences in motivation for physical activity among adolescent athletes based on level of achievement (DL and IDL). Achievement level refers to the level of competition that the athletes represented. Therefore, IDL was the next competition status after the DL status. In other words, IDL is a higher level of competition than DL. In our study, DL adolescents showed higher means on the "sports action with friends," "fitness and health," and "popularity" factors.

Reports of a higher mean on the "sports action with friends" factor is highly attributable to the cohorts' playing status or achievement level. Belonging to a category of aspiring athletes, participants most likely enjoy playing with their friends, developing their skill and performance level, and analyzing their acquired skills with other mates (Allender et al., 2006). The fitness and health factor was also identified as a potential antecedent to participation in sports among DL adolescents. Although this cohort's achievement level was lower than that of IDL adolescents, participants might have higher intrinsic and extrinsic motivation levels for enhancing fitness and health, which is an irresistible determinant to win at higher levels of competitions with respect to abilities, skills, and social approval (Bosnar & Balent, 2009). This reason could explain why fitness and health receives such a high score among DL athletes. This result also supports the finding of Allender et al. (2006), who indicated that adolescent athletes are highly obliged to the community setting; hence, during adolescence, they tend to have a greater competitive attitude towards challenging tasks in which they must maintain an ideal body image as a form of competition with their peers. Gaining popularity is the eternal essence of any competitive team in order to be more highly regarded by their peers, family, and society at large. DL adolescents are lower in competition status; hence, they most likely have a greater desire to gain popularity and compete with athletes who have higher achievement levels. Another consideration is that the research indicates that female adolescents possess a highly competitive mind that reflects a profuse desire to gain popularity through their level of skill and perfection at sports. This reason could explain why this factor showed a significant difference between the two cohorts.

IDL adolescents showed higher means on the "social status" and "energy release" factors, which were assumed to be strong motivating factors among DL adolescents. State and national levels are above inter-district

competition. Therefore, it seems that this cohort is emerging in their fields of activity, from which they seek to uplift their social status and gain more popularity. From a psychological viewpoint, adolescents are more inclined to establish their own identity to increase efficiency in various aspects of decision-making (Ahmed, 2013, 2014; Murcia et al., 2010; Ahmed et al., 2014). This finding could explain why social status showed a significant mean difference between the two achievement levels.

Evidence shows that total involvement is inevitable when achieving a rewarding result in any desired activity. Intrinsic motivation is a key determinant of success. As those who participate in sports in the current cohort are just below state-level athletes, they are considered elite athletes. They most likely engage in strenuous sports training schedules that demand a significant release of energy to obtain their next goal/success in a determined event. Items comprising this factor, such as "I want to stay in shape" and "I want to get rid of energy," clearly relate to having an ideal body image as an important outcome of regular physical activity. In addition, excellent sports performance is related to significant sports skill practice, which ultimately undermines much of the energy release that athletes experience.

Conclusions

Female sports participation in India remains nascent because of various barriers, including gender discrimination, sexual abuse, and support from peers, family, and society. Therefore, sustaining motivation among girls who actively participate in sports is crucial to disseminate a positive message to adolescents who seek encouragement. It also serves as a platform to showcase their potential in the sports world. Nevertheless, it is important to observe the necessary social support and relationships with peers as the basic strategy in promoting sports participation for female adolescents. For female adolescents who come from less privileged areas, it appears that it is important to observe the factors of opportunities, social support, and relationships with peers. In addition, motivation is equally important for young female adolescents who want to participate in competitive sports. However, physical education and sports are often regarded as one and the same in India, making the conduct of a program challenging. Moreover, the subject of PE is not yet considered compulsory in India, which is highly attributable to the lack of low awareness of games and sports among people. Motivation as a construct has been the subject of substantial research among sports psychologists. Therefore, this study is highly relevant, especially as it included data on female adolescents from Assam regarding items that potentially determine their motivations. This study also explored the latent structure using an exploratory factor analysis to identify six factors that provided moderate interrelations among all of the factors, ranging between -0.026 and 0.501. The strongest correlation was shown between fitness and health and popularity. Moreover, the EFA factors retained for the CFA provided sound psychometric properties (e.g., CFI = 0.922 and RMSEA = 0.054).

Competing Interests

The authors declare no competing interests.

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