

Original article (short paper)

Sport participation motives of young Brazilian judo athletes

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Abstract—The objective of this study was to identify the motives for sport participation in a sample of young judo athletes according to sex, age, and training history. A total of 392 subjects aged 12 to 18 years old participated in the study. Portuguese version of the Participation Motivation Questionnaire was used to identify motives for sports participation. Boys reported giving significantly more importance to sports participation in terms of Competition and Skill Development, whereas girls presented significantly higher ratings for Teamwork and Friendship. Motivational factors related to Achievement/Status and Fun presented significantly higher average ratings in younger judo athletes, whereas average ratings of Competition significantly increased with increasing age. Average ratings related to Fitness, Competition and Skill Development were proportionally and significantly higher according to training experience and training volume. These results will contribute to establishing intervention programs designed to reduce sport dropout rates among young judo athletes.

Keywords: motivation, adolescents, adhesion, dropout

Resumo—“Motivos para a prática de judô em jovens atletas brasileiros.” Objetivo do estudo foi identificar motivos para prática de judô em uma amostra de jovens atletas de acordo com sexo, idade e histórico de treino. Amostra foi constituída por 392 sujeitos com idades entre 12 e 18 anos. Motivos para prática de judô foram identificados mediante versão traduzida do Participation Motive Questionnaire. Rapazes assinalaram oferecer significativamente maior importância para prática de esporte nos fatores Competição e Competência Técnica, enquanto moças apresentaram valores significativamente mais elevados nos fatores Atividade de Grupo e Afiliação. Fatores de motivação relacionados ao Reconhecimento Social e à Diversão apresentaram dimensões significativamente maiores nos atletas mais jovens, enquanto importância atribuída a Competição aumentou significativamente com a idade. Valores atribuídos a Aptidão Física, Competição e Competência Técnica foram proporcional e significativamente mais elevados de acordo com experiência e volume de treino. Resultados encontrados deverão contribuir para estabelecer intervenções destinadas a reduzir taxas de abandono entre jovens judocas.

Palavras-chave: motivação, adolescentes, adesão, abandono

Resumen—“Motivos para la práctica del judo en los atletas jóvenes brasileños.” Objetivo del estudio fue identificar los motivos de la práctica del judo en una muestra de jóvenes atletas en función del sexo, la edad y la historia de entrenamiento. La muestra consistió de 392 sujetos de edades comprendidas entre 12 y 18 años. Motivos para la práctica del judo fueron identificados por el versión traducida de lo Participation Motive Questionnaire. Los niños señalaron dar significativamente mayor importancia en la práctica de deporte a los factores Competición y Competencia Técnica, mientras las niñas mostraron valores significativamente más altos en los factores de la Actividad del Grupo y Afiliación. Factores de motivación en relación con el Reconocimiento Social y Diversión tuvieron dimensiones significativamente mayor en los más jóvenes, mientras importancia asignada a la Competición aumentó significativamente con la edad. Los valores asignados a la Aptitud Física, la Competición y Competencia Técnica fueron proporcional y significativamente mayores en función de la experiencia y el volumen de entrenamiento. Los resultados deberían ayudar a establecer intervenciones para reducir las tasas de abandono entre los jóvenes judokas.

Palabras claves: motivación, adolescentes, adhesión, abandono

Introduction

The information available in the literature emphasizes the multiple benefits of sport to promote physical, mental and social well-being at young ages (Fraser-Thomas, Côté, & Deakin, 2008). In contrast, however, epidemiological survey have pointed out that a small portion of children and adolescents participate in regular sport programs (Weinberg *et al.*, 2000) and that, among those who begin to do so, there is an alarming number of dropouts, with repercussions present and in adulthood (Sirard, Pfeiffer, & Pate, 2006). In this particular, experimental evidence confirm that the motivation is key for achieving adherence to sports practice (Moreno, Cervelló, & Gonzáles-Cutre, 2007; Ulrich-French & Smith, 2009).

In view of this situation, important studies have sought to apply different theories developed in the field of psychology that could explain adherence to sports practice (Gill & Williams, 2008). To do so, it is necessary to identify and understand the motivational factors that can cause one to sport. The identification of underlying reasons to sport enables the development of actions that promote this practice and that can allow one to fully achieve one's proposed goals, thus enhancing a favorable motivational environment and, consequently, increasing the chances of adherence and minimizing the occurrence of possible dropouts.

Currently, the self-determination theory is the motivational theory commonly used to understand the motives for sport participation (Gill & Williams, 2008; Jöesaar & Hein, 2011; Sirard *et al.*, 2006; Weinberg *et al.*, 2000). The basic premise of the Self-determination theory is the association between individuals' perceptions of behaviors and different types of motives, influenced by social and environmental factors. These motives constitute a continuum of self-determined behavior that includes intrinsic and extrinsic types of motivation and amotivation (Deci & Ryan, 1985; 2000). Intrinsic motivation refers to engaging in sport solely for the pleasure and satisfaction derived from its practice. A young athlete intrinsically motivated will participate in sports voluntarily, in the absence of material rewards or external constraints. In contrast, extrinsic motivation comes from external sources, such as the lure of awards, trophies, money, fame, praise and social approval. Interestingly, it has been found that although extrinsic motivation is a strong motivator, it can undermine intrinsic motivation (Vallerand, 1997). According to the self-determination theory, behaviors associated to extrinsic motivation should cover the continuum between intrinsic motivation and amotivation, varying in the extent to which their regulation is more or less self-determined: integrated, identified, introjected, and external regulation (Deci & Ryan, 1985; 2000).

The motives of young people to participate in sport are a combination of multiple social, environmental and individual attributes that determine the choice for a specific modality, persistence in sports, and engagement in more intense training to achieve high performance (Weinberg *et al.*, 2000). In this respect, studies investigating the motivational factors for sports participation are important since they permit to identify the reasons that lead young people to begin participating in sport activities and the factors responsible for their permanence. Although it is possible to identify common motives, studies indicate that the reasons for sport participation vary according

to the type of sport and cultural context of young people (Jöesaar & Hein, 2011; Sirard *et al.*, 2006; Weinberg *et al.*, 2000).

Studies on this subject available in the literature involve young athletes from European (Almagro, Conde, Moreno, & Sáenz-Lópes, 2009; Buonamano, Cei, & Mussino, 1995; Cecchini, Méndez, & Nuñez, 2002; Fraile & De Diego, 2006; Garyfallos & Asterios, 2011; Jöesaar & Hein, 2011; Jones, MacKay, & Peters, 2006; Koivula, 1999; Salselas, Gonzales-Boto, Tuero, & Marquez, 2007; Zahariadis & Biddle, 2000), North American (Gill, Gross, & Huddleston, 1983; Sirard *et al.*, 2006; Weinberg *et al.*, 2000), and Asian countries (Gürbuz, Altıntaş, Aacı, & Hülya, 2007; Kirkby, Kolt, & Liu, 1999; Shang, 1997; Sit & Lindner, 2005; Thiborg, 2005). These studies have identified a consistent group of motives for participation in sport. However, extrapolation of the results to Latin American countries is questionable due to specific sociocultural and environmental determinants associated to the sports participation of these countries. In the Brazilian context, the few studies carried out were performed with samples poorly representative of young athletes, and the authors used designs which assessed specific types of sports, such as basketball (Guillén-García, Weis, & Navarro-Valdivieso, 2005; Rose Júnior, Campos, & Tribst, 2001), and swimming (Bastos, Salguero, Gonzáles-Boto, & Márques, 2008), not considering young judo athletes.

Judo is a martial art and an Olympic sport, comprising standing and ground wrestling, in which besides technical skill and tactical strategies, particular physical and physiological characteristics are also indispensable for success in competition and for training. Competitive judo can be described as a combative, high intensity sport in which the athlete attempts to throw the opponent onto his back or to control him during groundwork combat (Franchini, Del Vecchio, Matsushigue, & Artioli, 2011). In Brazil, judo began with the immigration of the first Japanese teachers at the beginning of the 20th Century, through the teachings of the traditional model of judo. Today, judo is one of the most practiced sports by young Brazilians and the country has a great expression worldwide, evidenced by the results obtained in international competitions.

The objective of the present study was to identify the motives for sports participation in a sample of young Brazilian judoists according to sex, age, and training history. The hypothesis tested was that sex, age and indicators of training (onset of training, training experience, training volume, and performance level) have a significant effect on the motives for sports participation. The expectation was that, independently of sex and age, young judoists with a more effective training history would be more intrinsically motivated toward sports than their peers.

Methods

Participants

The reference population of the study included young athletes of both sexes ranging in age from 12 to 18 years, who had participated in the final phase of the competitions organized by the Judo Federation of Paraná, Brazil, in 2013. The State of Paraná is located

in the south region of Brazil. Using the Human Development Index (HDI) as a reference point, Paraná is one of the most developed State of Brazil. In 2013, the mean HDI of Paraná was 0.825, which represents 104% of the national average (PNUD, 2013).

The selection of the sample occurred through a non-probability casual sampling. For this purpose, all coaches and officials were contacted before the beginning of the competitions and informed about the nature and objectives of the study and the principle of confidentiality. Next, their authorization was obtained to contact and invite the athletes and 392 subjects (163 girls and 229 boys) agreed to participate in the study by signing the voluntary informed consent form. This sample corresponded to about 70% of the participants in the competitions. The Research Ethics Committee of the State University of Londrina, Paraná, approved the study (Protocol 86/2009).

Procedure

The motives for sports participation were obtained by application of the Participation Motivation Questionnaire (PMQ), which was translated, adapted and validated for the young Brazilian population (Guedes & Silverio Netto, 2013), together with additional questions regarding sex, age, and training history (age at onset of training, training experience, training volume per week, and performance level). The original English version of the PMQ (Gill *et al.*, 1983) has been one of the most frequently used and has permitted a fairly balanced comparison between studies (Buonamano *et al.*, 1995; Garyfallos & Asterios, 2011; Guillén-García *et al.*, 2005; Gürbüz *et al.*, 2007; Kirkby *et al.*, 1999; Koivula, 1999; Salselas *et al.*, 2007; Shang, 1997; Sirard *et al.*, 2006; Sit & Lindner, 2005; Thiborg, 2005; Zahariadis & Biddle, 2000).

The PMQ is a 30-item questionnaire describing the possible reasons for sports participation, to which the participant responds on a 5-point Likert scale. Respondents replied to the stem: “*I participate in sport because ...*”, indicating their preference from 1 (“*not at all important*”) to 5 (“*extremely important*”). The results of factor analysis of the Portuguese version of the PMQ indicated eight factors: *Achievement/Status*, *Teamwork*, *Fitness*, *Competition*, *Skill Development*, *Friendship*, *Fun*, and *Emotion* reasons as basic motives for participation.

Each athlete answered individually the instrument with orientation of the same researcher. Application of the instrument in situations of pre- or post-competition stress was avoided. Thus, the athletes answered the questionnaire when were not in the environment of the competition, or when they were only watching the competitions. The participants received the questionnaire with instructions and recommendations on how to fill it out. There was no time limit for completing the questionnaire. The researcher who accompanied the data collection readily clarified eventual doubts reported by the respondents.

Data analysis

Initially, a confirmatory factor analysis was conducted with the maximum likelihood estimation method, to see if the factor

structure found by Guedes and Silverio Netto (2013) fit the data. The fit of the model was evaluated by means of the following indices (goodness-of-fit indices): χ^2 goodness of fit statistic, χ^2/df , Comparative Fit Index (CFI), Incremental Fit Index (IFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). Cronbach’s alpha coefficient was used to assess the internal consistency reliability of each factor.

Next, in order to select the most appropriate statistics for correlating intensive and selective aspects of sport participation motivation, goodness-of-fit tests (Kolmogorov-Smirnov statistic with a Lilliefors significance level) were used to determine whether the difference between the empirical distribution function of the variables and the distribution function expected under the hypothesis of normality was statistically significant. Whereas the data showed a normal distribution we used the resources of parametric statistics. The basic descriptive parameters (mean and standard deviation) were used to determine the importance of the sport participation motives.

Average ratings of the motives for sport participation were compared by multivariate (MANOVA) and univariate (ANOVA) analysis of variance, in which the motivational factors were the dependent variables and sex, age, age at onset of training, training experience, training volume per week, and performance level were the independent variables. We perform multiple comparisons by the post-hoc Scheffé test. The various analyses were carried out with the SPSS Version 20.0.

Results

Table 1 shows the distribution of the young judo athletes included in the study according to sex, age and training history. Among the 392 athletes studied, 42% were girls. Considering both sexes, the three age groups showed a similar proportion of subjects. However, a higher proportion of girls (42.9%) was ≤ 14 years, while a higher proportion of boys (67.7%) was ≥ 15 years. With respect to training history, a higher proportion of girls (35.6%) and boys (41.0%) began training at ≤ 9 years of age. The experience of training was shorter among girls, with 58.3% reporting ≤ 4 years of training compared to 43.6% of boys. Also, 17.8% of girls and 29.3% of boys showed a training duration ≥ 7 years. With respect to training volume, 56.3% of the participants trained 6-8 hours/week and 21.5% trained ≥ 9 hours/week. Most athletes (52.3%) had experience in national competitions. Among the remaining subjects, 32.4% and 15.3% reported experience in regional and international competitions, respectively.

The confirmatory factor analysis indicated a fit to the data: $\chi^2(240, N=392) = 782.48, p < .001; \chi^2/df = 3.26; CFI = .961; IFI = .962; TLI = .949; RMSEA = .050; and SRMR = .058$. All indices indicated a good fit and similar to previously observed factor structure (Guedes & Silverio Netto, 2013). Internal consistency reliabilities from the current data were: *Achievement/Status* (Cronbach’s $\alpha = .86$), *Teamwork* ($\alpha = .81$), *Fitness* ($\alpha = .79$), *Emotion* ($\alpha = .76$), *Competition* ($\alpha = .77$), *Skill Development* ($\alpha = .69$), *Friendship* ($\alpha = .66$), and *Fun* ($\alpha = .59$).

Table 1. Characteristics of the young judo athletes studied.

	Girls (n = 163)	Boys (n = 229)	Both sexes (n = 392)
Age group			
≤ 14 years	70 (42.9%)	74 (32.3%)	144 (36.7%)
15-16 years	49 (30.1%)	82 (35.8%)	131 (33.4%)
≥ 17 years	44 (27.0%)	73 (31.9%)	117 (29.9%)
Onset of training			
≤ 9 years	58 (35.6%)	94 (41.0%)	152 (38.8%)
10-11 years	47 (28.8%)	54 (23.6%)	101 (25.8%)
12-13 years	33 (20.2%)	45 (19.7%)	78 (19.9%)
≥ 14 years	25 (15.3%)	36 (15.7%)	61 (15.6%)
Training Experience			
≤ 2 years	29 (17.8%)	39 (17.0%)	68 (17.3%)
3-4 years	66 (40.5%)	61 (26.6%)	127 (32.4%)
5-6 years	39 (23.9%)	62 (27.1%)	101 (25.8%)
≥ 7 years	29 (17.8%)	67 (29.3%)	96 (24.5%)
Training volume			
≤ 5 hours/week	45 (27.6%)	42 (18.3%)	87 (22.2%)
6-8 hours/week	90 (55.2%)	131 (57.2%)	221 (56.3%)
≥ 9 hours/week	28 (17.2%)	56 (24.5%)	84 (21.5%)
Performance level			
International	24 (14.7%)	36 (15.7%)	60 (15.3%)
National	78 (47.9%)	127 (55.5%)	205 (52.3%)
Regional	61 (37.4%)	66 (28.8%)	127 (32.4%)

Table 2 shows the mean ratings of each motivational factor for sport participation reported by the young judoists. The most important motives were related to *Skill Development* (4.18 ± 0.84), *Competition* (4.16 ± 1.11) and *Fitness* (4.11 ± 0.91). The least important motives were related to *Fun* (3.01 ± 1.12) and *Achievement/Status* (2.99 ± 1.18). The three other motivational factors assumed an intermediate position with mean ratings obtained for *Friendship* (3.84 ± 1.09), *Teamwork* (3.79 ± 1.07) and *Emotion* (3.64 ± 1.12).

Table 2. Mean ratings of the motivational factors for participation in Brazilian young judo athletes obtained by application of the Participation Motivation Questionnaire.

Motivational factor	Mean ± standard deviation	
Skill development	4.18 ± 0.84^a	Most important
Competition	4.16 ± 1.11^a	
Fitness	4.11 ± 0.91^a	
Friendship	3.84 ± 1.09^b	Intermediate importance
Teamwork	3.79 ± 1.07^b	
Emotion	3.64 ± 1.12^b	
Fun	3.01 ± 1.12^c	Least important
Achievement/Status	2.99 ± 1.18^c	

Mean values followed by the same superscript letters did not differ significantly from one another ($p < .01$)

Table 3 shows the results of statistical analysis of the motivational factors according to sex and age. MANOVA indicated main effects of sex (*Wilks' lambda* = .952; $F = 2.404$; $p = .015$) and age group (*Wilks' lambda* = .879; $F = 3.184$; $p < .001$). In this respect, boys reported to give significantly more importance to sport participation in terms of *Competition* ($F = 5.394$; $p = .021$) and *Skill Development* ($F = 5.533$; $p < .017$), whereas girls presented significantly higher ratings for *Teamwork* ($F = 9.819$; $p = .002$) and *Friendship* ($F = 7.715$; $p < .001$). With respect to age, motivational factors related to *Achievement/Status* ($F = 4.441$; $p = .012$) and *Fun* ($F = 8.276$; $p < .001$) presented significantly higher mean ratings in younger judoists, whereas mean ratings of *Competition* ($F = 5.207$; $p = .006$) significantly increased with increasing age. Interestingly, the most important statistical differences in mean ratings were observed between judoists ≤ 14 years and those ≥ 17 years. No significant differences in mean ratings were observed between judoists aged 15-16 years and those ≥ 17 years.

Table 3. Multivariate and univariate analysis of motivational factors according to sex and age group.

	Achievement/ Status	Teamwork	Fitness	Emotion	Competition	Skill Development	Friendship	Fun
Sex	Multivariate analysis: <i>Wilks' lambda</i> = .952; $F(8,383) = 2.404$; $p = .015$							
Girls	2.97 ± 1.22	4.02 ± 1.02	4.14 ± 0.84	3.69 ± 1.11	4.05 ± 1.13	4.06 ± 0.88	3.88 ± 1.07	3.06 ± 1.12
Boys	3.06 ± 1.14	3.68 ± 1.09	4.07 ± 0.94	3.62 ± 1.13	4.31 ± 1.01	4.32 ± 0.78	3.55 ± 1.13	3.02 ± 1.11
Univariate analysis	$F = 2.255$ (ns)	$F = 9.819$ ($p = .002$)	$F = 1.510$ (ns)	$F = 0.384$ (ns)	$F = 5.394$ ($p = .021$)	$F = 5.533$ ($p = .017$)	$F = 7.715$ ($p < .001$)	$F = 0.151$ (ns)
Age group	Multivariate analysis: <i>Wilks' lambda</i> = .879; $F(16,764) = 3.184$; $p < .001$							
≤ 14 years	3.19 ± 1.21	3.86 ± 1.01	4.12 ± 0.87	3.56 ± 1.17	3.89 ± 1.20	4.22 ± 0.78	3.93 ± 1.20	3.23 ± 1.09
15- 16 years	2.99 ± 1.19	3.80 ± 1.03	4.13 ± 0.84	3.71 ± 1.06	4.25 ± 1.07	4.18 ± 0.83	3.84 ± 0.99	3.07 ± 1.07
≥ 17 years	2.75 ± 1.17	3.75 ± 1.11	3.99 ± 1.03	3.69 ± 1.13	4.31 ± 1.03	4.14 ± 0.91	3.88 ± 1.10	2.68 ± 1.11
Univariate analysis	$F = 4.441$ ($p = .012$)	$F = 1.178$ (ns)	$F = 2.903$ (ns)	$F = 1.757$ (ns)	$F = 5.207$ ($p = .006$)	$F = 0.330$ (ns)	$F = 1.229$ (ns)	$F = 8.276$ ($p < .001$)

Analysis adjusting for sex and age group.

Table 4. Multivariate and univariate analysis of motivational factors according to training history.

	Achievement/ Status	Teamwork	Fitness	Emotion	Competition	Skill Development	Friendship	Fun
Onset of training	Multivariate analysis: <i>Wilks' lambda</i> = .913; $F(24,1106) = 1.867$; $p = 0.010$							
≤ 9 years	3.13 ± 1.18	4.02 ± 0.95	4.31 ± 0.92	3.66 ± 1.19	4.41 ± 1.20	4.30 ± 0.67	3.91 ± 1.19	2.93 ± 1.23
10-11 years	3.04 ± 1.26	3.82 ± 1.11	4.17 ± 0.79	3.73 ± 1.03	4.30 ± 0.96	4.26 ± 0.81	3.99 ± 1.09	3.19 ± 1.01
12-13 years	2.87 ± 1.12	3.65 ± 1.07	3.94 ± 0.83	3.53 ± 1.07	4.12 ± 1.04	4.14 ± 0.98	3.81 ± 1.05	2.99 ± 0.99
≥ 14 years	2.82 ± 1.18	3.77 ± 1.14	3.74 ± 1.10	3.58 ± 1.15	3.87 ± 1.15	3.90 ± 0.91	3.82 ± 1.03	2.91 ± 1.15
Univariate analysis	$F = 2.071$ (ns)	$F = 1.833$ (ns)	$F = 7.605$ ($p < .001$)	$F = .528$ (ns)	$F = 9.405$ ($p < .001$)	$F = 4.224$ ($p = .006$)	$F = .542$ (ns)	$F = 1.372$ (ns)
Training experience	Multivariate analysis: <i>Wilks' lambda</i> = .880; $F(24,1106) = 2.071$; $p = .002$							
≤ 2 years	3.12 ± 1.16	3.84 ± 1.01	3.83 ± 0.81	3.58 ± 1.11	3.89 ± 1.16	3.98 ± 0.87	4.13 ± 0.98	3.21 ± 1.06
3-4 years	2.98 ± 1.23	3.86 ± 1.09	3.96 ± 1.02	3.60 ± 1.21	4.05 ± 1.15	4.08 ± 0.86	4.06 ± 1.07	3.10 ± 1.06
5-6 years	3.17 ± 1.17	3.90 ± 1.10	4.23 ± 0.75	3.62 ± 1.08	4.21 ± 1.10	4.25 ± 0.77	3.81 ± 1.25	3.07 ± 1.15
≥ 7 years	3.23 ± 1.21	3.66 ± 1.03	4.39 ± 1.00	3.76 ± 1.08	4.37 ± 1.05	4.43 ± 0.82	3.60 ± 1.04	2.60 ± 1.12
Univariate analysis	$F = 2.045$ (ns)	$F = 1.724$ (ns)	$F = 7.271$ ($p < .001$)	$F = 1.022$ (ns)	$F = 8.048$ ($p < .001$)	$F = 8.795$ ($p < .001$)	$F = 4.423$ ($p = .005$)	$F = 6.041$ ($p < .001$)
Training volume	Multivariate analysis: <i>Wilks' lambda</i> = .889; $F(16,764) = 1.912$; $p = .015$							
≤ 5 hours/week	3.15 ± 1.18	3.87 ± 1.09	3.91 ± 0.94	3.64 ± 1.04	3.69 ± 1.09	3.83 ± 0.89	3.83 ± 1.15	2.86 ± 1.21
6-8 hours/week	3.08 ± 1.19	3.75 ± 1.05	4.05 ± 0.91	3.60 ± 1.14	3.92 ± 1.06	4.18 ± 0.81	3.85 ± 1.06	3.02 ± 1.08
≥ 9 hours/week	3.29 ± 1.22	3.92 ± 1.17	4.21 ± 0.72	3.71 ± 1.20	4.65 ± 0.72	4.86 ± 0.73	4.03 ± 1.27	3.13 ± 1.15
Univariate analysis	$F = 2.131$ (ns)	$F = 1.175$ (ns)	$F = 5.602$ ($p = .001$)	$F = 1.959$ (ns)	$F = 9.429$ ($p < .001$)	$F = 9.448$ ($p < .001$)	$F = 1.308$ (ns)	$F = 2.322$ (ns)
Performance level	Multivariate analysis: <i>Wilks' lambda</i> = .861; $F(16,764) = 8.430$; $p < .001$							
International	2.77 ± 1.20	3.67 ± 0.99	4.23 ± 0.84	3.32 ± 1.12	4.39 ± 1.13	4.53 ± 0.64	3.63 ± 1.09	2.90 ± 1.20
National	2.96 ± 1.18	3.74 ± 1.09	4.08 ± 0.94	3.58 ± 1.09	4.15 ± 1.09	4.18 ± 0.85	3.84 ± 1.10	2.87 ± 1.11
Regional	3.22 ± 1.24	4.04 ± 1.05	3.85 ± 1.15	3.81 ± 1.12	3.72 ± 1.20	3.98 ± 0.84	4.17 ± 1.13	3.17 ± 1.15
Univariate analysis	$F = 7.119$ ($p < .001$)	$F = 4.610$ ($p = .019$)	$F = 5.283$ ($p < .001$)	$F = 4.942$ ($p = .001$)	$F = 7.408$ ($p < .001$)	$F = 6.277$ ($p < .001$)	$F = 8.679$ ($p < .001$)	$F = 3.396$ ($p = .034$)

Analysis adjusting for sex and age group.

The results of statistical analysis shown in Table 4 indicated significant main effect for the four indicators of training history on the mean ratings of motives for participating in sport reported by the judoists. Motivational factors related to *Fitness* ($F = 7.605$; $p < .001$), *Competition* ($F = 9.405$; $p < .001$) and *Skill Development* ($F = 4.224$; $p = .006$) differed significant between ages at the onset of training. The athletes who began training at ≤ 9 years of age showed the most important differences in mean ratings compared to those starting at ≥ 14 years, with the observation of higher ratings in the former. With respect to experience of training, the results showed significantly and proportionally higher mean ratings of motivational factors related to *Fitness* ($F = 7.271$; $p < .001$), *Competition* ($F = 8.048$; $p < .001$), and *Skill Development* ($F = 8.795$; $p < .001$) as the time of sport experience increased. However, athletes with ≤ 2 years of training presented higher mean ratings of motivational factors related to *Friendship* ($F = 4.423$; $p = .005$) and *Fun* ($F = 6.041$; $p < .001$) than those with ≥ 7 years of training.

Regarding training volume, the mean ratings of motivational factors related to *Fitness* ($F = 5.602$; $p = .001$), *Competition* ($F = 9.429$; $p < .001$) and *Skill Development* ($F = 9.448$; $p < .001$) were proportionally and significantly higher in judoists training more hours/week compared to

those with a lower training volume. Analysis of the performance level showed a significant and proportional increase in mean ratings of motivational factors related to *Fitness* ($F = 5.283$; $p < .001$), *Competition* ($F = 7.408$; $p < .001$), and *Skill Development* ($F = 6.277$; $p < .001$) with increasing competitive level from regional to international. The opposite was observed for motivational factors related to *Achievement/Status* ($F = 7.119$; $p < .001$), *Teamwork* ($F = 4.610$; $p = .019$), *Emotion* ($F = 4.942$; $p = .001$), *Friendship* ($F = 8.679$; $p < .001$), and *Fun* ($F = 3.396$; $p = .034$). In this case, judoists participating only in regional competitions presented significantly higher mean ratings than those participating in international competitions.

Discussion

The objective of this study was to identify the motives for sport participation in a sample of young Brazilian judo athletes according to sex, age, and training history. This approach permits better understanding of the motivations of young judoists and provides relevant information that contributes to promoting

sports among young people. Motivational factors were identified by application of the PMQ as previously translated to Portuguese and validated for the Brazilian population. The PMQ, through its translated versions adapted to different languages, is probably the most widely used instrument for the analysis of motives that lead young people to participate in sport (Buonamano *et al.*, 1995; Garyfallos & Asterios, 2011; Guillén-Gracia *et al.*, 2005; Gürbüz *et al.*, 2007; Kirkby *et al.*, 1999; Koivula, 1999; Salselas *et al.*, 2007; Shang, 1997; Sirard *et al.*, 2006; Sit & Lindner, 2005; Thiborg, 2005; Zahariadis & Biddle, 2000).

The eight-factor structure of the PMQ translated and adapted to Portuguese by Guedes and Silverio Netto (2013) is similar to that of the original version proposed by Gill *et al.* (1983) and of most studies published that used the same experimental design. Internal consistencies of motivational factors determined by Cronbach's alpha coefficient were acceptable in the current sample and higher than those of the original version. In addition, the difference between highest (.86) and lowest scores (.59) was smaller than that obtained for the original version of the PMQ (.78 and .30, respectively), suggesting a greater balance between motivational factors in the translated version. The differences in the size of the rating scales used for the two versions of the PMQ and in the characteristics of the sample selected in each study might explain these findings. The original version used a 3-point scale, whereas the present study employed a 5-point scale that provides greater discriminatory power. In addition, the original PMQ was applied to young people engaged in summer leisure programs (Iowa Summer Sports School), whereas the young athletes studied here were competing at a higher level while participating in the final phase of the competitions organized by the Judo Federation of Parana, the main state competitions for judoists under the age of 18. As a consequence, the context of the two studies may have tapped differences in sports interests.

The present results showed that *Skill Development*, *Competition* and *Fitness* were generally the main motivational factors for sport participation reported by the young judoists, i.e. the respondents indicated that they practice sport mainly to improve and maintain their technical skills and physical condition. Although the subjects were young athletes, these findings are not surprising since young people who decide to practice sport favor motives that are intimately related to the success of their activity. Studies involving young people from different socio-cultural backgrounds showed similar results (Cecchini *et al.*, 2002; Sirard *et al.*, 2006; Weinberg *et al.*, 2000).

On the other hand, motivational factors related to *Fun* and *Achievement/Status* contributed the least to the option of sport participation by the judoists. According to the literature, *Achievement/Status* is indeed considered to be of little importance by young athletes for the decision to participate in sport (Alderman & Wood, 1976; Williams & Cox, 2003). However, no consensus exists in the literature regarding motives related to *Fun*. In fact, some studies reported this motive to be one of the most important for youth participation in sport (Campbell *et al.*, 2001; Weinberg *et al.*, 2000), whereas others were unable to confirm this finding (Cecchini *et al.*, 2002; Sirard *et al.*, 2006). One possible explanation for this discrepancy might be the semantic meaning attributed to the expression "fun". For

some young people, amusement and entertainment may not be understood as something to be enjoyed, but rather as playing, and are therefore rejected since, for them, sport is something very serious, a fact explaining the inconsistency of the results reported in the different studies.

Motivational factors related to *Friendship*, *Teamwork* and *Emotion*, which are predominantly intrinsic factors, were of moderate importance for the decision of young athletes to participate in judo and significantly less important than the classical extrinsic motivational factors, *Fitness*, *Competition* and *Skill Development*. These are interesting findings that should be investigated in future studies designed to propose theoretical assumptions that assign more importance to attributes linked to the intrinsic motivation of young people when they decide to practice sports (Gill & Williams, 2008).

Analysis of the motives for sport participation according to sex showed that boys gave significantly more importance to the motivational factors *Competition* and *Skill Development* than girls, whereas girls gave more importance to motives related to *Teamwork* and *Friendship*. Evidence in the literature confirms the tendency of girls to more intensely identify themselves with social and group motives for sport participation, whereas boys tend to give importance to attributes related to challenge and striving for technical excellence (Cecchini *et al.*, 2002; Sirard *et al.*, 2006; Weinberg *et al.*, 2000).

With respect to age, although the mean ratings of the motives Achievement/Status and Fun were the lowest when compared to the other factors identified in the study, younger judoists gave significantly more importance to these two factors than judoists ≥ 17 years. This finding confirms the typical predisposition of younger people to the appreciation of the ludic component of the sport while establishing expectations of being recognized within the social context through their sports participation (Gill & Williams, 2008). Older athletes were found to be significantly more motivated by factor related to Competition than those ≤ 14 years. Similar results have been reported in previous studies (Cecchini *et al.*, 2002; Hellandsig 1998; Nigg, 2003) and can be explained by the fact that athletes ≥ 17 years attribute a more competitive meaning to sport and that sport offers an opportunity to prove their personal competency.

Indicators of training history reported by the judoists also had repercussions on the level of motivation for sport participation. Judoists who began training at an early age and had a longer duration of training tended to give significantly more importance to motives related to *Fitness*, *Competition* and *Skill Development*. In contrast, athletes who had a shorter period of training gave significantly more importance to the motivational factors *Friendship* and *Fun*. These results are consistent with theoretical (Gill & Williams, 2008) and empirical evidence (Petherick & Weigang, 2002) reported in the literature and support the hypothesis that beginners are typically more motivated by reasons related to fellowship and playfulness, whereas more experienced athletes preferentially search for challenges and strive for excellence in terms of technical skills and physical conditioning.

Training volume, evaluated based on the hours of training per week, was also an important attribute related to training history and had a significant impact on the motives for sport

participation reported by the athletes. In this respect, the more the athletes trained per week, the greater the importance attributed to motivational factors related to *Fitness*, *Competition* and *Skill Development*. These results agree with those reported in a few studies on this topic (Cecchini *et al.*, 2002; Weinberg *et al.*, 2000). However, the cross-sectional design of these studies and of the present investigation does not permit to determine whether the motivation to search for challenges and strive for excellence in terms of technical skills and physical conditioning is responsible for or is a consequence of the higher training volume, highlighting the possible reversibility of this relationship.

Performance level was a factor that most revealed significant differences in the level of motivation of young judo athletes to participate in sport. Judoists who so far had only participated in regional competitions gave significantly more importance to the factors *Achievement/Status*, *Teamwork*, *Emotion*, *Friendship*, and *Fun*. On the other hand, *Fitness*, *Competition* and *Skill Development* were significantly more valued by athletes who had already participated in international competitions. These findings agree with previous studies highlighting the concern and attention that need to be paid to social and emotional motives in early stages of the sport career of young athletes (Gill & Williams, 2008). However, as the stages of sport performance progress from national to international competitions, the greater requirements make motives associated with challenge and physical and technical competence more attractive to high-performance young athletes.

The results of the present study have some limitations. Firstly, the ability to generalize the current findings is limited by the fact that only young judo athletes participating in the final phase of the competitions organized by the Judo Federation of Paraná of the Parana, the main state competitions for judoists under the age of 18, were sampled. Thus, it is not known to what extent our findings represent other universes of young judoists. Secondly, this was a cross-sectional study, therefore not suitable to establish inferences of causality between motives and aspects of judo practice. However, the current findings can be used to call attention to the possible motivational factors for participation in judo among young Brazilian athletes. Furthermore, as in any study that relies on self-report, there are questions of possible bias, including the possibility of the young athletes overestimating or underestimating specific behaviors associated with participation in sports.

Conclusion

The young judoists selected for this study were motivated to participate in sport particularly for reasons related to self-realization and dominance or improvement of sport skills, as well as physiological reasons related to physical conditioning, since the motivational factors *Skill Development*, *Competition* and *Fitness* received the highest ratings. In addition, important effects of sex, age and training history on the motivational factors for sport participation were identified. These findings highlight the importance of sport participation motives related to the dominance and improvement of sports skills, execution

of physical exercise, and maintenance of good physical conditions. Thus, according to the Self-determination theory, they are behaviors of regulations less self-determined and associated to extrinsic motivation, instead of the enjoyment that the activity can provide. Within this context, interventions addressing these motivational requirements should be offered in order to improve the social-emotional quality of routine trainings and, consequently, to increase the chance of present and future adherence to sport. Further longitudinal studies using similar experimental designs are needed to better understand the impact of the interaction between sex, age and training history on the motivational factors for sport participation during specific periods of the career of young athletes and in adult life.

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Declaration of conflicting interests

Authors declare no conflicts of interest with respect to the research, authorship, and/or publication of this article.

Acknowledgments

The primary author is supported by Brazilian National Board for Scientific and Technological Development—CNPq (Protocol no. 304973/2013-0).

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Manuscript received on August 23, 2014

Manuscript accepted on December 16, 2014



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