

Research article

Reduced Spanish Version of Participation Motives Questionnaire for Exercise and Sport: Psychometric Properties, Social/Sport Differences

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Abstract

Understanding the motives that influence physical activity participation is important in order to orientate physical activity promotion and increase physical activity levels of practice of the population. Although many instruments been created and validated to measure motives to perform physical activity, one of the most frequently used scales during years is the Participation of Motives Questionnaire (PMQ) by Gill et al. (1983). Unfortunately, despite being so used and translated into many languages, there is no psychometric support for some factors about due to a low internal consistency. The purpose of this research was to present a reduced model of the Spanish version of the PMQ and to analyze the motives for sports participation. The Spanish version of PMQ was applied to participants of both sexes with ages between 12 and 60 years ($M = 19.20$; $SD = 6.37$). Factorial validity of the questionnaire was checked using exploratory and confirmatory analyses. Analysis of items and internal consistency of the factors were carried out. Reduced version measures seven dimensions (competition, status, teamwork, energy release, family/peers, skill development and health/fitness) with good values of validity and reliability (Cronbach's Alpha were between 0.713 and 0.879). Different reasons for exercise and sport by sociodemographic variables were found. For example, females practice for exercise and sports for competition and teamwork than males Elite athletes practice more exercise and sport also for teamwork, skills development and health/fitness than amateurs. Finally those who have more experience, practice more physical activity and sport for competition, status and health/fitness.

Key words: Participation, motives, reduced version, PMQ, psychometric properties.

Introduction

Physical activity levels are being reduced quickly over years and a large percentage of the population does not reach the recommendations of physical activity and participation in sport (Jefferis et al., 2015). For example, 59 % of adults had never participated in any type of vigorous leisure-time physical activity in US (Pleis et al., 2009). Inactivity rises with age, is higher in women than in men, and is increased in developed countries (Hallal et al., 2012). Specifically, in Spain, only 43% of scholars are physically active (Spanish Superior Council of Sports [CSD] and Alimantum Foundation, 2011). Vélchez and Ruiz-Juan (2016) showed that an important drop out of physical activity begins at 12 years of age; furthermore, many students do not even have any intention of being active in a future at this age.

In addition to the already widely known health

benefits of physical activity in old age, Dunskey et al. (2014) affirms that it is possible that adherence to recommended guidelines of physical activity is associated with favorable anthropometric characteristics. Hallal et al. (2012) affirmed that regarding to body mass index, 35% of adults were overweight and 27% were obese, which could be related to the current epidemic development of obesity. Therefore, it is necessary to promote sport practice in order to increase physical activity level of the population for health. Participation in, specifically, sports or sports activities can be an effective way to increase the levels of practice of the population due to, as according to Papadarisis and Goudas (2005), participation in organized sports programs has increased significantly in recent decades.

Sport practice in Spain follows same tendency than physical activity participation. Males practice more sports than females, there is less sport participation with age and only 19.5 % of population above 15 years old practice sports everyday (Ministry of Education, Culture and Sport [MECS], 2015).

Understanding the motives that influence sports participation is important in order to orientate physical activity promotion and increase physical activity levels of practice of the population.

Although many instruments been created and validated to measure motives to perform physical activity (Table 1), one of the most frequently used scales during years is the Participation of Motives Questionnaire (PMQ; also called Participation Motivation Inventory, PMI; or Iowa Sports School Questionnaire, ISSQ), developed by Gill et al. (1983). The PMQ is a 30-item questionnaire describing the possible reasons (achievement/status, team atmosphere, fitness, energy release, skill development, friendship and fun as basic motives for involvement for sports participation), answered on a 5-point Likert scale (Ahmed, 2012). This questionnaire has permitted a fairly balanced comparison among many studies over many years (Anagnostou et al., 2013; Guedes and Netto, 2013; Masten et al., 2010; Sindik et al., 2013; Sit and Lindner, 2006; Yan and McCullagh, 2004). Unfortunately, despite being so used and translated into many languages, there is no psychometric support for some factors due to a low internal consistency. For example, Cronbach's Alpha = 0.60 for friendship with seven factors (Masten et al., 2010), 0.55 for affiliation and 0.53 for significant others with nine factors (Brodkin and Weiss, 1990), 0.61 for lower factor with eight (Oyar et al., 2001), 0.63 for social interaction with six factors (Kondrič et al., 2013), 0.50 for tension release and 0.54 for affiliation with seven factors

(Ampofo-Boateng et al., 2007).

In Spain, Balaguer and Atienza (1994) carried out the first adaptation. These authors concluded that the analysis of psychometric properties of PMQ showed a lack of internal consistency in its factorial structure (six of eight factors had a Cronbach's Alpha lower than 0.70), but this didn't impede its use by many researchers (González et al., 2000; Guillén et al., 2007; López and Márquez, 2001). Martínez et al. (2008) proposed another version with 33 items, but these researchers neither achieved strong psychometric properties. Five of eight dimensions that emerged after exploratory analysis didn't get over minimum value proposed by Nunnally (1978). Pérez et al. (2015) studied factorial structure of PMQ and reported reliability was low for two factors (energy release = 0.69 and affiliation = 0.67). All these studies only presented exploratory factorial analyses. Confirmatory perspective led the investigator to optimize the construction process or adaptation of a questionnaire (Batista-Foguet et al., 2004). According to Jöreskog (1969) a hypothesis that has been generated with exploratory analyses should be contrasted by confirmatory analysis.

With this data, it's necessary to look in depth at the psychometric properties of the Spanish version of PMQ in order to provide a Spanish measurement of motives of participation. Finally, given that the importance of the reduced versions of the measurement instruments in sport context (Balluerka and Gorostiaga, 2012) a reduced version of PMQ could be very useful. A reduced version allows that athletes can maintain concentration and motivation for longer when answering (De Francisco, 2015).

For all these reasons, the primary aim of this study was to examine the construction validity of the Spanish version of PMQ as an instrument to measure motives for participation in physical activities and sports. Also, this study will analyse using a valid instrument relating the different motives with social and sport variables such as gender, age, type of sport, years training, duration of training, training volume per week and level of competitions.

Methods

Participants

The sample was constituted by 515 Spanish participants of different sport modalities of which 28% were players of individual sports and 72% team sports. Highest percentage of individual sport was karate (5.6%) and for team sport was basket (41%), of which 70.3% were men and 29.7% women. Their ages were between 12 and 60 years ($M = 19.20$; $SD = 6.37$). By age groups, 49.7% were minor of 18 years old and 50.3% were adult. They trained an average of 3.87 sessions per week ($SD = 2.09$), with a total volume of weekly training of 8.05 hours ($SD = 6.25$). According to competition level, 72.8% were amateurs and 27.2% elite participants.

Instrument

Spanish version of Participation Motivation Questionnaire (PMQ, adapted of Martínez et al., 2008). This questionnaire was formed by 33 items, 4 items for the measurement of the Status/recognition, 8 items for

Table 1. Reduced Spanish version of the Participation Motivation Questionnaire.

Authors	Year	Instrument	Dimensions
Gill Gross and Huddleston	1983	<i>Participation of Motives Questionnaire (PMQ) or Participation Motivation Inventory (PMI)</i>	Achievement/status, team atmosphere, fitness, energy release, skill development, friendship and fun.
Gavin	1992	<i>Fitness Incentives Quizzes</i>	Body motives, social motives and psychological motives
Dwyer	1992	<i>Revised version of PMQ</i>	Team orientation, achievement/status, fitness, friendship, skill development, and fun/excitement/challenge
Frederick and Ryan	1993	<i>Motivation for Physical Activities Measure (MPAM)</i>	Body motives, competence and fun
Markland and Hardy	1993	<i>Exercise Motivations Inventory (EMI)</i>	Body image and weight, fun and wellness, prevention and positive health, competition, affiliation, muscular resistance and strength, social status, stress control, flexibility and agility, challenge, and health emergencies
Markland and Ingledew	1997	EMI-2	Physical appearance, muscular strength, resistance, flexibility, health, adherence, overweight, skills and self-esteem
Marsh	1996	<i>Physical Self-Description Questionnaire (PSDQ)</i>	Health, appearance, motor competence and learn new skills, social, and fun/intrinsic motivation
Ryan et al.	1997	<i>Motives for Physical Activity Measure-Revised (MPAM-R)</i>	Well-being motives, competition motives, appearance motives and social motives
Telama et al.	2002	-	Mastery, enjoyment, psychological condition, physical condition, appearance, others' expectations, affiliation and competition/ego
Morris and Rogers	2004	<i>Physical Activity and Leisure Motivation Scale (PALMS)</i>	

Fitness, 3 items for Socialization/fun, 4 for Team Atmosphere, 3 items for Competition, 5 items for Liberation of Energy, 2 items for Friendship, and 4 items for Achievement. A five-point Likert scale was used from (1) “not important” to (5) “very important”. All items were enunciated so that to greater numerical answer, greater degree of motives.

Additional questions regarding gender, age, and training history (type of sport, experience -years training-, duration of training, training volume per week, and level of competitions) were included.

Procedure

Researchers contacted participants/teams and after they established when they could do the questionnaire. It was an incidental sampling. Participants signed the informed consent (or their sport tutor if they were younger/under age) and a standardized application of the questionnaire was carried out. The researchers and another assistant

visited high performance centers or club headquarters of Spain and administered the questionnaire in large group setting before habitual training session.

Data analysis

Basic descriptive statistics of each item were calculated. Following factorial analyses (exploratory and confirmatory) were executed with the help of SPSS 21 and EQS 6.2. Also analyses of items and analyses of reliability of the factors of the PMQ were made.

Nonparametric tests were carried out because the assumptions of normality did not comply for motives of participation ($p < 0.0001$). It was performed U-Mann-Whitney test for gender, age (under-age or younger/major or adult), type of sport and level of competition (elite and amateurs), and Spearman correlations for experience (years of practice), duration of training and training volume per week.

Table 2. Descriptive statistics of items.

	Mean	Standard Deviation	Skewness (typical error = 0.108)	Kurtosis (typical error = 0.215)
Item 1	4.14	.974	-1.116	.942
Item 2	4.30	.815	-.980	.397
Item 3	4.57	.698	-1.619	2.181
Item 4	4.15	.869	-.959	.797
Item 5	4.33	.895	-1.315	1.220
Item 6	4.24	.886	-1.059	.601
Item 7	4.45	.827	-1.426	1.307
Item 8	4.57	.690	-1.511	1.618
Item 9	4.42	.888	-1.691	2.795
Item 10	4.39	.905	-1.519	1.833
Item 11	4.56	.715	-1.643	2.435
Item 12	4.53	.714	-1.519	2.036
Item 13	4.18	1.072	-1.215	.672
Item 14	4.39	.762	-1.103	.642
Item 15	4.47	.794	-1.514	2.054
Item 16	4.14	.966	-.889	.011
Item 17	4.40	.834	-1.432	1.749
Item 18	4.43	.835	-1.502	2.105
Item 19	4.20	.956	-.954	.041
Item 20	4.34	.833	-1.263	1.480
Item 21	3.15	1.268	-.072	-.991
Item 22	2.87	1.346	.068	-1.128
Item 23	3.25	1.326	-.279	-1.016
Item 24	4.41	.774	-1.324	1.829
Item 25	4.39	.802	-1.235	.996
Item 26	3.77	1.254	-.718	-.577
Item 27	3.95	1.005	-.771	.027
Item 28	4.01	.999	-.889	.355
Item 29	3.88	1.081	-.842	.151
Item 30	3.51	1.141	-.426	-.554
Item 31	4.54	.751	-1.961	4.646
Item 32	3.72	1.225	-.693	-.444
Item 33	3.83	1.247	-.828	-.355

Results

Descriptive statistics

Table 2 shows descriptive statistics. Means are located between 2.87 (item 22) and 4.57 (items 3 and 8) so “Be popular is the motive” less rated and “I want to improve my skills” and “I want to learn new skills” are motives

more highly assessed. In general, means are high with values about 4. On the matter of the standard deviations, their values are between 0.690 (item 8) and 1.072 (item 13). Almost all items show negative skewness, except item 22. Item 31 presented the highest value (1.961; but not greater to 2). Leptokurtic distributions were predominant and it is observed a great peak in item 31 (4.646).

Exploratory factor analysis (EFA)

Firstly, an EFA of the 33 items of the Spanish version of Participation Motivation Questionnaire was made with half of the sample approximately ($n = 264$). In agreement with that eigenvalue exceeded 1.00, seven factors were extracted with principal axis method and oblique rotation (direct oblimin), that explained the 53.53% of the total variance of the matrix of correlations (Kaiser-Meyer-Olkin = 0.88; $\chi^2_{(528)} = 4040.15$; $p < 0.01$). The higher factorial loads of the items were not obtained in the hypothesized factors according to Martínez et al. (2008).

Successive EFA and analyses of items were made for the reduction of the number of items, being used three sources of statistical information: structural coefficients, item-total correlation corrected and value of alpha if item deleted. Also substantive criteria were considered. 10 items were eliminated and the final model with seven factors (factor Friendship didn't reach the value of .70 for Alpha Cronbach) and 23 items explained the 57.60% of variance. Table 3 presented extracted factors, eigenvalues and explained proportion of variation before rotation.

Confirmatory factor analysis (CFA)

A CFA model was made with the remaining sample ($n = 251$). Robust Maximum Likelihood Estimation was the estimation method of parameters. For the evaluation of the model adjustment was used following indices: quotient between Satorra-Bentler scaled χ^2 and its degrees of

freedom, Root Mean Error of Approximation (RMSEA), Bentler-Bonett Normed Fit Index (NFI), Bentler-Bonett Non-Normed Fit Index (NNFI) and Comparative Fit Index (CFI).

Factorial loads to the square (R-Squared) were statistically significant ($p < 0.05$), whose values oscillated between 0.238 (item 6) and 0.757 (item 21). Coefficients of correlation among seven factors were significant too. The quotient between Satorra-Bentler scaled χ^2 (272.63) and its degrees of freedom (209) were of 1.30. The value of RMSEA was of 0.035, while NNFI and CFI obtained values of 0.945, and 0.954, respectively. The standardized residuals oscillated between -.202 (relation between items 22 and 7) and 0.194 (relation between item 27 and the 14).

In order to improve the model fit, one modification was made: item 6 was deleted because its R-Squared was very low (.238). Finally, the model with 22 items (Figure 1) showed the following values: χ^2 (243.45) /df (188) = 1.29; RMSEA = 0.034; NNFI = 0.950; and CFI = 0.959. Standardized residuals oscillated between -0.200 (items 22 and 7) and -0.153 (items 32 and 16). Correlation among seven factors (Table 4) were all significant and only the relation between competition and teamwork was negative ($R_{xy} = -0.027$). The highest coefficient was for relation competition and skill development ($R_{xy} = 0.864$), and the lowest correlation was for status and skill development ($R_{xy} = 0.002$).

Table 3. Initial eigenvalues and total variance explained.

Factor	Initial Eigenvalues			Extraction sums of square loading		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	6.704	29.146	29.146	6.276	27.287	27.287
2	2.957	12.857	42.003	2.622	11.402	38.689
3	1.682	7.314	49.317	1.270	5.521	44.210
4	1.506	6.547	55.865	1.060	4.611	48.821
5	1.241	5.396	61.261	.884	3.841	52.662
6	1.080	4.696	65.957	.668	2.902	55.564
7	.858	3.732	69.689	.468	2.037	57.601
8	.749	3.255	72.944			
9	.679	2.954	75.898			
10	.638	2.772	78.669			
11	.611	2.657	81.327			
12	.554	2.408	83.734			
13	.513	2.230	85.964			
14	.465	2.022	87.986			
15	.452	1.967	89.953			
16	.386	1.679	91.631			
17	.354	1.538	93.170			
18	.327	1.421	94.591			
19	.323	1.405	95.995			
20	.273	1.188	97.183			
21	.239	1.038	98.221			
22	.223	.970	99.192			
23	.186	.808	100.000			

Table 4. Correlations among motives.

Motives	1	2	3	4	5	6	7
1.Competition	--						
2.Status	.116	--					
3.Team work/atmosphere	.595	-.027	--				
4.Energy release	.398	.426	.183	--			
5.Socialization	.242	.305	.143	.625	--		
6.Health/fitness	.631	.247	.483	.484	.292	--	
7.Skill development	.864	.002	.639	.174	.150	.672	--

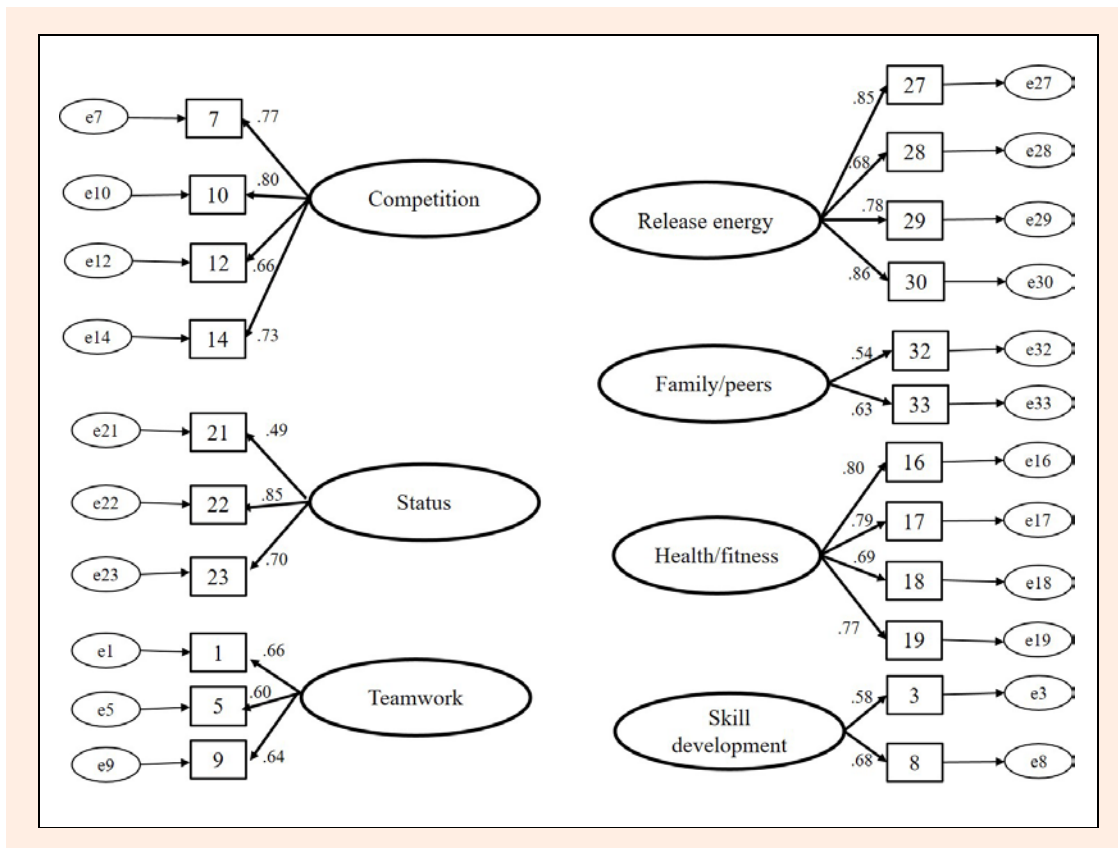


Figure 1. Final confirmatory factor model. Parameters estimates of the final model relating to different motives of practice.

Testing invariance with nested sequences of models for sex, age and sport level were assessed. Model 1 is an unconstrained model where there is a configural invariance (participants of different groups conceptualize the constructs in the same way); model 2 holds all factor loadings are equal across groups; model 3 postulates factor loading and factor variances and covariances are equal; finally, model 4, hypothesizes factor loadings, factor variances and covariances and error variances and covariances are invariant across the groups. Traditional method of measuring invariance is through a chi-square difference test. According to these criteria, factor loadings and factor variances and covariances are invariant across sex and age, but only factor loadings are invariant across different groups for sport level. Cheung and Rensvold (2002) suggested using a decrease in CFI greater than or equal to 0.01 as indicator of noninvariance. Commensurate with this, the data imply identical results (Table 5).

Analysis of items and reliability

Values of Cronbach’s alpha for each factor, corrected item-total correlation (H_j) and values of alpha (α) if item deleted are presented in Table 6. Cronbach’s Alpha were between 0.713 for release of energy and 0.879 for status. Cronbach’s Alpha values would not be increased with the elimination of any item.

The lowest item-factor correlation was in release of energy (item 30 = 0.459) and the highest item-factor value in status (item 22 = 0.807). This last dimension showed the highest correlations with values between 0.807 and 0.747.

Relation between motives and sociodemographic variables

About gender, results showed significant differences for competition ($Z = -2.048$; $p = 0.041$) and teamwork ($Z = -2.947$; $p = 0.003$). Females (Range M= 278.13) practice for exercise and sports for competition more than males (Range M= 249.49). Also females (Range M=287) practice more for teamwork than males (Range M= 245.74). In table 7, it shows means, standard deviation for each factor by gender, and U-Mann-Whitney test results.

According to age, statistical differences for competition ($Z = -.2.107$; $p = 0.0135$), status ($Z = -3.149$; $p = 0.002$) and socialization ($Z = -2.897$; $p = 0.004$) were found. The older practice more for competition (Range M= 271.39) than younger (Range M= 244.46). However, the younger practice more for status (Range M= 278.69) than older (Range M= 237.55) and also the youngers (Range M= 276.78) more for socialization than older (Range M= 239.43).

Statistical differences were found according to type of sport (individual or team) for competition ($Z = 2.173$; $p = 0.03$), teamwork ($Z = -3.287$; $p = 0.001$) and release energy ($Z = -2.001$; $p = 0.045$). Individual Participants practice more for competition (Range M = 248.67) than team players (Range M = 282.13). And team players practice more for teamwork (Range M = 267.09) and for release energy (Range M = 262.88) than individual participants (Range M = 216.48 and Range M = 231.49, respectively).

According to level of competition, statistical differences for competition were found ($Z = -6.650$; $p <$

0.001), teamwork ($Z = -3.283$; $p = 0.001$), skills development ($Z = -5.066$; $p < 0.001$) and health/fitness ($Z = -2.912$; $p = 0.004$). Elite participants (Range $M = 327.55$) have more motives to exercise and sport for competition than amateurs (Range $M = 232.03$). Elite participants practice more exercise and sport also for teamwork (Range $M = 292.36$) than amateurs (Range $M = 245.17$). Also elite participants (Range $M = 306.48$) practice more for skills development than amateurs (Range $M = 239.9$). Finally, also elite participants (Range $M = 288.7$) exercise more for health/fitness than amateurs (Range $M = 246.54$).

According to experience, despite having a low relationship, statistical significance was found for competition ($p = 0.176$; $p < 0.001$), status ($p = 0.105$; $p = 0.017$)

and health/fitness ($p = 0.116$; $p = 0.008$). Those who had more experience, practice more physical activity and sport for these motives (Table 8).

According to duration of training, it was found statistical significance for competition ($p = 0.115$; $p = 0.009$). Those who train more in each session, practice more for competition than those who have shorter trainings (Table 8).

According to the number of sessions of training per week, there were no statistical differences between any factor of motives neither duration of training per week, only competition was statistically significant ($p = 0.157$; $p < 0.001$). People who train for more time have only more motives to practice related to competition, than those who train less time/hours per week (Table 8).

Table 5. Invariance tests across sex, age and sport level.

Model	χ^2	df	p	NNFI	CFI	RMSEA	RMSEA 90% CI	$\Delta\chi^2$	Adf	ACFI	
Sex	1. Configural model	476.767	376	.001	.927	.940	.046	.032-.058	--	--	--
	2. Invariant factor loadings	496.300	391	.001	.926	.938	.047	.033-.058	19.533	15	.002
	3. Invariant factor correlations	520.270	412	.001	.928	.936	.046	.032-.057	23.97	21	.002
	4. Invariant measurements errors	575.382	434	.001	.908	.918	.051	.039-.062	55.112	22	.018
Age	1. Configural model	446.932	376	.006	.947	.957	.039	.022-.052	--	--	--
	2. Invariant factor loadings	457.389	391	.011	.953	.960	.037	.019-.050	10.466	15	.003
	3. Invariant factor correlations	489.442	412	.005	.948	.953	.039	.022-.051	31.51	21	.007
	4. Invariant measurements errors	558.344	434	.001	.919	.928	.048	.035-.059	68.902	22	.025
Sport level	1. Configural model	485.256	376	.001	.920	.935	.048	.035-.060	--	--	--
	2. Invariant factor loadings	496.637	391	.001	.926	.937	.047	.033-.058	11.381	15	.006
	3. Invariant factor correlations	552.308	412	.001	.907	.917	.052	.040-.063	55.671	21	.019
	4. Invariant measurements errors	711.800	434	.001	.845	.861	.072	.062-.081	159.492	22	.062

Note: χ^2 = chi-square; df = degrees of freedom; p = p value; NNFI = Bentler-Bonett non-normed fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation; CI = confidence interval; Δ = change.

Table 6. Corrected item-total correlation and values of alpha if item deleted.

Factor	Items	H_i	α
Competition ($\alpha = 0.775$)	7	.643	.685
	10	.633	.696
	12	.511	.755
	14	.550	.735
Status ($\alpha = 0.879$)	21	.747	.846
	22	.807	.791
	23	.747	.847
Teamwork ($\alpha = 0.810$)	1	.648	.755
	5	.689	.716
	9	.649	.751
Release energy ($\alpha = 0.713$)	27	.516	.642
	28	.525	.639
	29	.511	.645
	30	.459	.679
Family/peers ($\alpha = 0.815$)	32	.687	--
	33	.687	--
Skill development ($\alpha = 0.768$)	16	.582	.706
	17	.488	.752
	18	.623	.689
	19	.595	.699
Health/fitness ($\alpha = 0.799$)	3	.665	--
	8	.665	--

Discussion

The present research was conducted with the principal aim of validating a new Spanish version of PMQ (Appendix). A reduced version has been obtained with good

psychometric properties with respect to its factorial validity and to its reliability. After exploratory and confirmatory factorial analysis, the model with seven motives presents a good fit to the data.

The first factor was named *competition* because it includes four items related to win and the challenge.

However, one item seems not directly related but does indirectly with to compete: “I like the action”. The second factor was called *status* which encompasses three items related to popularity and recognition. The third factor was defined as *teamwork* and it includes three items related with the cooperation and the membership. The fourth factor is *energy release* because encompasses four items linked to canalize energy. The fifth factor is defined by

items where the principal reason for participating in sport is due to family or friends. For this reason, it’s called *family/peers*. The sixth factor was named *health/fitness* because of strong load of motives linked to exercise for health with four items. Finally, the seventh factor was determined by two items which comprised skills, so it was called *skill development*.

Table 7. Statistical descriptives and U-Mann_Whitney by gender.

		n	Mean	SD	Range Mean	Z	p
Competition	Men	362	4.411	.615	249.49	-2.048	.041
	Women	153	4.508	.615	278.13		
	Total	515	4.440	.616			
Status	Men	362	3.141	1.150	263.75	-1.354	.176
	Women	153	2.980	1.226	244.40		
	Total	515	3.093	1.174			
Teamwork	Men	362	4.247	.791	245.74	-2.947	.003
	Women	153	4.411	.758	287.00		
	Total	515	4.296	.784			
Release energy	Men	362	3.967	.673	262.92	-1.161	.246
	Women	153	3.884	.716	246.37		
	Total	515	3.942	.687			
Family/peers	Men	362	3.780	1.118	257.58	-.100	.921
	Women	153	3.768	1.162	258.99		
	Total	515	3.776	1.130			
Skill development	Men	362	4.551	.624	253.98	-1.057	.290
	Women	153	4.604	.632	267.51		
	Total	515	4.567	.626			
Health/fitness	Men	362	4.302	.690	260.25	-.538	.591
	Women	153	4.274	.695	252.67		
	Total	515	4.294	.691			

Table 8. Spearman correlations for experience, duration of training and training volume per week with each motive of practice.

	Experience (years of practice)		Duration of training		Training volume per week	
	Sperman	p	Sperman	p	Sperman	p
Competition	.176**	.000	.115**	.009	.157**	.000
Status	.105*	.017	.018	.683	.068	.125
Teamwork	.019	.666	.008	.862	.034	.446
Realease energy	-.073	.098	-.049	.268	-.022	.622
Family/peers	.050	.260	-.041	.357	.015	.742
Skill development	.058	.189	.075	.091	.080	.072
Health/fitness	.116**	.008	.071	.106	.064	.147

All these factors overcome the threshold established by Nunnally (1978) for the coefficient alpha (0.70). Previous Spanish version didn’t reach it. Balaguer and Atienza (1994) using factor analysis obtained eight factors, but only status, teamwork and health/fitness got values over 0.70. López and Márquez (2001) after exploratory analysis reported that only two (status and diversion/Fun) of eight factors had acceptable values of reliability. Martínez et al. (2008) with exploratory factorial analysis informed that status, health/fitness and friendship/peers showed acceptable alpha. Finally, Pérez et al. (2015) in a sample of non-elite athlete, found eight factors which energy release and teamwork were below 0.70. Psychometric results of this study allow to conclude that the reduced Spanish version of PMQ obtained is a good measurement of motives of sports participation.

No data was found about correlation between factors for Spanish versions and results with different English versions were diverse. In this study, according to Cohen’s (1988) criteria, high correlations were found for competition-skills development, competition-teamwork, competition-health/fitness, skill development-teamwork and skills development-health/fitness.

Females perform more physical activity and sports for motives like competition and teamwork. This results showed in consonance with other studies where females practice more socially than males (Sindik et al., 2013) and for competition (Gürer et al., 2015), but results were in contrast with most researches revised that found that competition motives were more important for males than for females in their sample (Ciuffo et al., 2014; Kilpatrick et al., 2004; Sindik et al., 2013; Sukys et al., 2014). These results are very useful to help promotion of sports partici-

pation of the population. On the basis of these results, the promotion policy should take into account the differences by gender. It seems to be consensus that more sociable sports activities should be offered for women, since women's participation in sports has been always lower than that of men (MECS, 2015). But the suggestions for men has to be considered with caution, because other authors like Molanorouzi et al. (2015) suggest that health policies should be oriented on providing opportunities for men to skill development) and to compete but this data suggest that this motives are more likely for females.

Furthermore, Molanorouzi et al. (2015) suggested that health policies should provide opportunities to enhance appearance for females, but based on data presented in this paper, women practice more to improve their skills and to compete than men.

The older, have more motives for competition. However, youngsters exercise more for status and socialization. These results showed in consonance with other studies for competition (Balaguer and Atienza, 1994; Sukys et al., 2014) where older athletes are more likely for motives related to competition, but no coincidence for status (Balaguer and Atienza, 1994). However, other researchers have found differences for health/fitness (Brodkin and Weiss, 1990; Butt et al., 2011). Maybe one possible explanation is related to one from Molanorouzi et al. (2015) who affirmed that as people age and look back over their lives, they become more aware of their health and they feel the need to maintain healthier lifestyles, they suggested that old age brings increasing concern with the deterioration of health realizing that exercise habits have a large impact on one's physical health through the prevention of diseases. Thus, it could be reasonable to expect that older adults would show more motives related to health/fitness. However, for competition, other studies have opposite results and showed that as people get older, they decrease their motives to compete (Gordon and Hunter, 2013). In conclusion, there is a discrepancy in many factors concerning motives of practice that it could be interesting of keep evaluating to orientate efforts of promotion of practice.

According to the type of sport, those who perform individual sports do it more for competition, like as Frederick and Schuster-Smith (2003), and those who play team sports do it more for teamwork, such as González et al. (2000), and release energy. Molanorouzi et al. (2015) who also found more teamwork and health/fitness motives for team sports. The finding that team sport participants have clearly more motives for teamwork is an evidence, but also it is necessary to find out more motives that keep people doing their sport regularly, like release energy as mentioned.

Expertisement participants practice more for competition, status and health/fitness. Maybe experience has relation with confidence to influence motive of competition. Labane et al. (2016) affirm that it positively influences the capacities to comply with the tactical and technical indicators, to show the control and to assume the responsibility in the sport performance during the competition. Gürer et al. (2015) also studied motives according to experience of practice but they found only statistical

differences in skill development, team affiliation and friendship. There is a need to keep studying this type of variable to highlight some recommendations to adherence in physical activity and sport. Even more sessions per week did not have any statistical differences; it was found that those who spend more time per week practice more for competitive motives. This is supported by the findings of other researchers like Frederick and Schuster-Smith (2003), but there is not enough literature to conclude.

Conclusion

In this study it was found that elite/professional athletes exercise more for competition, teamwork, skill development and health/fitness than amateur athletes but it has not been found literature related to this variable. It would be interesting to determine which factors influence the adherence to physical activity and sport in both professional and amateur athletes. It seems logical to think that professional athletes could seek their sense of sports practice in competition, as amateurs can play sports competing or not. To compete, it seems clear that improving skills may be one of the keys perceived by professional athletes to improve their performance. Also the state of health and fitness seem to be perceived as an important reason for their professional role, rather than amateurs.

Guedes and Netto (2013) emphasize that the PMQ is the most widely used questionnaire for the analysis of motives of practice and it has been translated into versions adapted to different languages. Despite the extensive evidence obtained so far as motive of practice, it should not compare the data due to diversity of versions without psychometric support. This study makes it possible, at least in Spanish speaking countries. Also it will allow better understanding of the motives of athletes in order to improve promotion of sports among general population.

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Key points

- Motives for exercising has been widely researched but unfortunately, despite being so used and translated into many languages, there is no psychometric support for some factors about due to a low internal consistency.
- Reduced version proposed has good values of validity and reliability.
- Different reasons for exercise and sport by socio-demographic variables were found and many recommendations are explained.

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