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Achievement Goal´s Orientation of Youth Brazilian Gymnastics: TEOSQ Factorial Exploration

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Abstract
The aim of the research was testing the reliability and the exploratory factor analysis of the instrument TEOSQ, and then offer the results of the goals

orientation and comparing the results by age of the youth Brazilians gymnastics. **Methodology**. This research was based on a descriptive quantitative boarding, and the instrument used was the TEOSQ; Take part in this research 58 (n=58) female youth gymnastics', aged 7 to 20 years (age average 10.72±3.05) of the Itupeva City, São Paulo, Brazil. The statistical used was the Alpha´s Cronbach, Exploratory Factor Analysis (Varimax) above Mean, median, standard deviation and Spearman correlation. **The results** displayed the internal stability of the instrument with ego´s Alpha of 0.80 and task´s Alpha of 0.70; Rotated matrix (Varimax) with two factors, in factor 01 the group of issues was located related to ego orientation and for the factor 02 the group of issues were liked to task orientation. **Conclusion.** Concerning the goal´s orientation the results shows the prevalence of task orientation (4.45±0.79) besides ego orientation (2.64±1.28), so we can consider that this group is more involved in learning and practicing more to have a better performance in competition an presentation overall, the instrument seems to be relevant.

Keywords: Gymnastics, Youth Sports, Goals Orientation, Motivation.

Introduction

The practice of Gymnastics for all can manifest itself from multiple internal logics, an action modulated by the modus operandi and by the consolidation of processes within each group. In other words, the understanding of the practice, its possibilities, limits and the way to develop it will depend on the reading that each group of practitioners prints, always respecting its constituent characteristic: pure sociomotricity; that is, a collaborative sociomotricity practice, with no opponents.(Menegaldo, F. R., & Bortoleto, M. A. C.2020)

The beginning of the gymnasts' career is permeated by financial difficulties, training with improvised equipment and a lack of minimum resources, including causing some gymnasts to leave the sport[2], a fact that can influence the emotional aspects of young athletes during sports initiation. It is necessary to include works with a view to the child's psychological preparation, especially for issues such as anxiety, fear and shame are fundamental for the successful insertion of the child in gymnastics(Vargas, P. I., & Capraro, A. M. (2020).

In order for young athletes to remain in sport it is necessary that there is motivation, a fact that the role of motivation in learning and

performance seems indisputable, not being restricted to academic life, but extending to the different skills and situations of everyday life(Ferreira, N. R. C., de Oliveira2020).

The Causal Attribution Theory developed by Weiner (1985) places cognitions at the center of the motivational process that emphasizes the human being's spontaneous ability to reflect on past events, in order to draw conclusions to guide future behavior. According to this perspective, one of the main human motivations would be the search for the causes of events, in order to allow greater understanding and control of reality(Vargas, P. I., & Capraro, A. M., 2020).

In this way, Individuals tend to perform better when they perceive that they are observed by people (external evaluators), suggesting that the motivation of external regulation may have a significant influence on performance, and, although it is argued that intrinsic motivation (task-oriented) is important for maintaining sports practice and learning new skills, individual sports athletes need extrinsic motivation (ego orientation) to be successful and consequently increase performance.(Lima, C. M.; Caperuto2020)

Therefore, there is a need to obtain validated and reliable tests and scales in order to assess the different contexts and emotions that the sport is involved in. Measurements with strong psychometric properties within and between countries will facilitate the understanding of possible cultural similarities or variations in the subject of achievement motivation for sport (López-Walle, J., Tristán, J., Castillo, I. T. I., & Balaguer, I. 2011).

Consequently, the aim of the research was at fist, testing the reliability and the exploratory factor analysis of the instrument, and then offer the results of the goals orientation and comparing the results by age of the youth gymnastics'.(Günther, H. 2006).

Method

Research Model

This research was based on a descriptive quantitative boarding with mmaximum control over the context; researcher must interact with the objective of the study with neutrality and objectivity (leav-

ing feelings or impressions aside); the data collected must be analyzed using a mathematical language (statistical analysis and probability theories) to explain the phenomena[7], so this kind of study must they must meet the criteria of scientificity, such as validity, reliability, generalization and transferability of the results. Thus quantitative studies work with the concept of reliability (reliability and reproducibility) and strength of the method, namely the possibility of achieving the same result in a study re-test made under the same conditions by other researchers(Duda, J. L. 1992)..

Instruments

In the data collection of research, data was used a Likert-type motivation scale of five points – TEOSQ (Task and Ego Orientation in Sport Questionnaire) developed by Duda[9], which identified the motivational orientation to the sport. This instrument was developed through studies conducted in the classroom, containing four different areas: the purpose of the guidelines, the causes of success, intrinsic satisfaction and skill. In Brazil (Portuguese Brazilian language) too many studies were designed using TEOSQ, demonstrating stability (Hirota,V.B., Shindler, P, Villar, V. 2006, 2007, 2013, 2014). With this purpose, the TEOSQ aims to assess individual goal´s orientation in perspective the set objective in sport, by detecting if the subjects are oriented to task or ego; this instrument is requested to research participant stating their concordance with respect to the way each one applies the issues. The choice of this instrument took it limits itself the aspects of the motivation, orientation for task or ego; presented high internal consistency; Stability in the reliability coefficient; construct validity and content; Presented an adequate number of issues that added aces identification questionnaire does not produce fatigue participants; It turned out to be suitable for individuals of all ages. This is a self-applicable instrument and has an average duration of answer within 5 minutes.

Participants

The study included 58 (n=58) female youth gymnastics athlete's participants, aged 7 to 20 years (age average 10.72±3.05, coefficient of variation=28.49%), who train gymnastics in the city of Itupeva, São Paulo, Brazil. The gym school is public and main-

tained by the Municipal office, so students have no cost in order to train and practice gymnastics. Routine class of gym, it follows that students must maintain weekly frequencies of three times, and participates in the championships systematized by the municipality on the weekend. The municipality provides lunch and transportation for all participants and there we have a coach and tree assistances.(Figueiredo Filho, D. B.; Silva Jr., J. A. 2010)

Statistical data Analisys

The adopted statistical method was the calculation of *Cronbach's Alpha Coefficient* in which internal scale validity analysis was performed. Alpha is a coefficient of reliability based on internal consistency of the items within the test will be given continuity to the statistical analysis of the scale, where statistics are processed for total items; therefore, we analyze all items taking as its premise the possibility of exclusion of any. This is a general reliability coefficient that is more versatile than the other methods and a feature of this coefficient is that it may be used for items that have multiple measures of values, such as writing test and attitude scales to score as strongly agree, I agree, etc. Furthermore, the Alpha´s coefficient is probably the best to estimate the reliability most commonly used in standard test. It was performed exploratory factor analysis (rotated matrix – VARIMAX with Kaiser Normalization), as an alternative measurement process is to identify variables that "go together", i.e., variables that have the same underlying structure; according to Figueiredo Filho & Silva Jr.(Figueiredo Filho, D. B.; Silva Jr., J. A. (2010) the main function of the different factor analysis techniques is to reduce a large amount of observed variables to a few factors. We also used to complement the statistic processing calculation of the *Spearman* correlation ("rho", $p \leq 0.05$), since the psychometric non-parametric data, it was also calculated the mean, median and standard deviation and coefficient of variation of each output separately in each direction of TEOSQ instrument, namely task and ego. In order to verify possible significant differences between the means of task and ego goals, we decided to conduct the *Mann Whitney* test ($p \leq 0.05$). For all the procedures, we divide the participants, by age, into two groups: Group 1 (G1 – mean age 8.4±1.16, variation coefficient of 13.80% Median of

8 years) and Group 2 (G2 – mean age 13.21±2.48, variation coefficient of 18.77%, median of 12.5), both groups was homogenous in terms of age. For the data analysis was done, the SPSS software - Data Editor Version 22.0 for Windows was used**.**

Ethics in Research

This study included the signing of the term sheet by the director of sport schools of the City hall and signed the consent form and information, or by the parents or guardians of the study participants by paying attention to research ethics September by the Declaration of Helsinki in World Medical Association[24]. Signatures were collected from parents and guardians, in meetings held in order to explain the purpose of the study and its contribution to the community and the possible evolution of learning and performance of young athletes. Study finds with opinion approved by the Research Ethics Committee with number: 1.116.194.

Results and Discussion

The results are posted in two tables that corresponds the aims of the study. The first table contains the descriptive statistics and the second one with the factors testing.

As we can see in Table 1, the results of ego orientation match to issues number 01, 03, 04, 06, 09 and 11, and the median results appears as 3 points, following by the mean, standard deviation and coefficient of variation of each issue demonstrating stability is results uncovered by the total mean of 2,64. Results corresponding of task orientation correspond issues number 02, 05, 07, 08, 10, 12 and 13, and the median result was 5; mean, standard deviation and coefficient of variation of each issue demonstrating stability is results revealing the total mean of 4,45.

Results related to internal consistency of the instrument was done by Cronbach´s Alfa coefficient, that regarding to ego orientation the result was 0.804, and observing if each issue was deleted, all of it was important to the instrument because none of the results for each item, if deleted, would raise the total Alpha value. For the task orientation the total Alpha´s result was 0.702, consider a good score also. Taking into account if each task issue was deleted, all the values were above the total, but they are similar considering the decimal place.

Table1. Median, Mean, standard deviation, coeficient of variation, Cronbach´s Alfa and Cronbach´s Alfa if the item of the scale were deleted of the TEOSQ.

Goal´s ORIENTATION	*ISSUE*	*Median*	*Total Median*	*Mean*	*St. Deviation (±)*	*Coef. Of Variation (%)*	*Total mean (±)*	*Cronbach´s Alfa*	*Cronbach´s Alfa if issue were deleted*
EGO	**1**	**3**	**3**	2,81	1,38	49	**2.64±1.28**	**.804***	0.684
	3	**3**		2,52	1,04	41			0.720
	4	**2**		2,12	1,12	52			0.700
	6	**2**		2,24	1,22	54			0.747
	9	**3**		3,36	1,16	34			0.708
	11	**3**		2,79	1,36	48			0.685
TASK	**2**	**4**	**5**	4,33	0,75	17	**4.45±0.79**	**.702***	0.726
	5	**5**		4,36	0,90	21			0.723
	7	**5**		4,64	0,71	15			0.751
	8	**4**		4,09	0,84	20			0.713
	10	**5**		4,47	0,70	16			0.748
	12	**5**		4,69	0,75	15			0.739
	13	**5**		4,56	0,65	14			0.747

*maximus value is 1.0

Establishing the correlation between task and ego orientation the result was a weak correlation and not significant (p=0.274), demonstrating the independent of the results, so even if the task orientation increases, the trend for ego orientation to rise is small.

As we can see in this research the instrument appears stable to internal consistency, showing yet, that technical features of task orientation are highlighted how believe in your effort, are more persistent, are independent, are more creative and innovative, have a feeling of success, do not show high capacity, have greater self-control, judge your success by the quality of your work, and favor the ability to cooperate and the effort to the personal domain[25]. Winterstein classifies the motivation theory on the assumption that there must be something that triggers an action, which gives it a direction, maintains its course toward a goal and finish[25]. The same author clarifying what reasons are hypothetical constructions that are learned along the human development and serve to explain behavior.

Other similar results were found regarding the internal consistency of the instrument performed in Brazil both in physical activities and individual sports[5, 18, 16, 14, 25, 27, 28, 29], as in team sports[13, 15, 17]. So, that comparisons were possible, one of our hypotheses was to observe if there was a significant difference between different categories, in which they include athletes' ages, and for this to be possible, the formation of two groups was considered, related to the age of the athletes: G1 and G2 both groups homogeneous tested by the coefficient of variation.

The first test was to observe the difference between the ego orientation of G1 and G2, and was confirmed that the ego means of G1 (2.89±1.35) is higher than G2 (2.36±1.15) (p=0.001). For task orientation difference between G1 (4.38±0.85) and G2 (4.48±0.76), the difference was not significant (p=0.341), remembering that the G2 athletes are older than G1, and confirm the first result of total mean task orientation with their characteristic's.

Correlating ego, task and age, from G1 there is a significant and negative correlation between age and ego (rho= -0.466; p=0.001), in other words, as age tends to increase the ego orientation tends to

decrease. This can be explained by the fact that athletes gain more experience and dedicate themselves more, besides increasing participation in festival and competitions.

In the same way, in G2, the correlation between ego and age was also significant, moderate and negative (*rho*= -0.477; *p*=0.05), corroborating the idea that the characteristics related to ego orientation should fall once age of athletes increases and their experience and confidence in the sport increases.

Established the correlation between ego and task orientation, even among G1 there is a weak, positive but significant correlation (*rho*=0.148; *p*=0.05), that is, as the task orientation increases there is a tendency towards orientation for the ego to rise up merely. Therefore, we can consider and highlight the relevance of a good job of basic training of young gymnastics athletes, based on attempts at improvement, effort and determination and the quest to overcome the results according to your limits and performance of your skills[30]. That is essential to monitor the athletes, and coaches and teachers should create a mastery climate and target self-improvement and self-referenced comparisons over interpersonal competitiveness[31].

The final statistical treatment was observing the exploratory factor analysis of the instrument used in this research, plus in order to comply with the test, the normality calculation was first adopted. The result of Kaiser-Meyer-Olkin (KMO) and Bartlett test showed us suitability and significant (0.684; *p*=0.001), thus enabling be done factor analysis. Higher the better, and 0.50 as the minimum suitability level[32].

Observing the Table 2 the model of the rotated Matrix used was the Varimax with close factors, so the expectation was that the questions related to the ego were grouped in one factor and the questions related to the task were grouped in the other factor, and this was the result. In this way the latent values referring to the ego orientation are highlighted by one asterisk in order that task orientation was by two asterisks. All latent values of both orientations are higher comparing to the other, that is, if we look at question 01, which refers to ego orientation, the same latent value in factor 1 (0.797), different from factor 2 (0.178), and so on.

Table 2. Rotated matrix (VARIMAX / Factor 01 and Factor 02), extracting the values of each issue of variance of the TEOSQ scale for gymnastics

ISSUE	FACTOR 1 (EGO)*	FACTOR 2 (TASK)**	*Extraction*	% of Variance
01 (Ego)	**0.797***	0,178	0,666	26,529
02 (Task)	0,056	**0.839****	0,706	24,809
03 (Ego)	**0.717***	-0,201	0,554	9,090
04 (Ego)	**0.803***	-0,062	0,649	4,159
05 (Task)	0,287	**0.545****	0,379	7,572
06 (Ego)	**0.369***	-0,091	0,144	6,215
07 (Task)	-0,172	**0.424****	0,21	5,290
08 (Task)	0,262	**0.748****	0,628	4,633
09 (Ego)	**0.704***	0,026	0,497	3,531
10 (Task)	-0,176	**0.597****	0,387	2,874
11 (Ego)	**0.820***	0,168	0,701	1,884
12 (Task)	-0,074	**0.763****	0,587	1,750
13 (Task)	0,162	**0.781****	0,501	1,665
Eingen-values	**3,44***	**2,81****		

***Related to Factor 1**

****Related to Factor 2**

Other important result is observing the % of variance, which corresponds to the possibility of extracting values from stratified factors, that is, if we add the percentages of variance of the first and second questions, we have a total of over 50%, in this case in specific 51.32%, thus confirming the concentration of motivational orientations in two factors. Our study corroborates the study of López-Walle et al. that explain that the exploratory factor analysis supports the structure of two factors, explained by 55.9% of the total variance; and confirmatory factor analysis confirms the hypothesis two-dimensional structure[6].

Conclusion

It becomes evident in this study that the TEOSQ instrument presents an exploratory factor analysis defined in its two groups of questions - Factors (task orientation and ego orientation), demonstrating its effectiveness, reproducibility and reliability , which can be replicated. Still with the data, it is possible to affirm that the group of female gymnasts is task oriented, despite being a sport of an individual nature, in which performance depends solely on the athlete's performance themselves, thus demonstrating that young athletes train hard, strive to learn new techniques, they empathize with the group and possibly perform satisfactorily with themselves.

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