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ATLETAS CAMPEÃS OLÍMPICAS DE JUDÔ: ASPECTOS MOTIVACIONAIS DO TREINAMENTO

OLYMPIC JUDO CHAMPION ATHLETES: MOTIVATIONAL ASPECTS OF TRAINING

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Resumo

Os objetivos deste trabalho são identificar os fatores motivacionais que fazem com que as judocas treinem por um longo período até finalmente atingirem um alto nível no judô na equipe brasileira. O trabalho utilizou questionários fechados de valores de avaliação dos membros da equipe olímpica brasileira de judô, (amostra de 20 mulheres) 41 no total foram avaliados. Três profissionais especialistas com experiência reconhecida e comprovada em competições de judô validaram os questionários. Os resultados mostraram uma lista de inúmeros indicadores que foram classificados e priorizados como: motivação para resultados, enfrentamento da adversidade, pico sob pressão, estabelecimento de metas/preparação mental, concentração, não se preocupar e querer treinar. Todos esses valores foram prevalentes no questionário fechado obtido neste ranking. Em conclusão, existem diferentes fatores que motivam os judocas a continuar praticando judô sem levar em conta as recompensas presentes, mas futuras. Por outro lado, sua resiliência diminui por um longo período de tempo.

Palavras-chave: Judô; motivação intrínseca; motivação extrínseca; atividade física extracurricular; educação física.

Abstract

The objectives of this work are to identify the motivational factors in Women's Judo athletes train for long term period until they finally become high level in Judo in Brazilian Team. The work employed closed-ended rating values questionnaires Brazilian Olympic Judo team members, (Subject women 20) 41 in total were evaluated. Three professionals' experts of renowned and proven experience in judo competitions validated the questionnaires. The results showed a list of numerous indicators which have been classified and prioritized as: outcome motivation, coping with adversity, peak under pressure, setting goals/mental preparation, concentration, no worries and eager to be trained. All these values were prevalent in the closed-ended questionnaire obtained in this ranking. In conclusion, different factors exist which motivate judo athletes to continue to practice judo without considering the present but the future rewards. On the other hand, their resilience reduces over a long period of time.

Key words: Judo; intrinsic motivation; extrinsic motivation; extracurricular physical activity; physical education.

1. Introduction

Judo is one of Olympic combat sports most commonly practiced in Brazil, examines factors the individual psychological variables and their influences on motivation and resilience to practicing the sport for many consecutive years despite the numerous injuries that athletes can suffer. Sport, as a social phenomenon, has attracted several the attentions of numerous researchers. Consequently, the so-called psychology sports studies, considered as a "new" science, is becoming stronger every day.

The establishment of specific instruments to investigate sports has introduced support towards more general studies on psychological linkage. Instruments, such as Minnesota Multiphasic Personality Inventory and the State-Trait Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970), are used by many researchers for their predictability efficacy (Buss & Cantor, 1989; Martens, 1977; Ozer & Reise, 1994; Sarason, 1978).

According to Mahoney *et al*, (1987) and Mahoney & Avener, (1977), who have developed instruments to measure Psychological Skills for Sport (PSIS), its latest version (PSIS R-5) has 45 items arranged in scales. These scales are anxiety (control of anxiety), concentration, confidence, mental preparation, motivation and team cohesion.

Smith (1980, 1989b) debate those psychological skills are continuously important in performance improvement programs. Meanwhile, we will not assess the performance itself, but the trajectory of athletes to become a female elite athlete, that is a high-performance athlete. That is why we find the necessity of using the psychometric measures of coping skills related to judo.

Motivational climate perceived by athletes in training was measured using the Perception of Motivational Climate Questionnaire Sport (PMCSQ) developed by Biddle *et al.* (1995), adapted to the sporting context. This scale measures the perception of motivational climate of athletes. This motivational theory was preferred because it corresponds to the characteristics of so-called *judokas* (as judo practitioners named in Judo World). In addition, this motivational theory is aligned to judo because of the intrinsic nature of the sport that demands autonomy and is directly related to the need for competition and progress (evaluation system of belts) as the necessity of belonging to a social group to be recognized by them. Presently, sporting activities in Brazil are recognized by the fact of the Paris 2024 Olympic Games athletes and will be in Los Angeles, 2028 have a socioeconomic recognition like tennis, golf or soccer players, as has never been before in judo.

2. Methods

2.1. Theory/calculation

The Athletic Scoping Skills Inventory-28 (ACSI-28) is an instrument frequently used in several studies to deduce individual differences in psychological skills in sport

context (Petrie, 1993; Smith, Smoll & Smoll, 1991; Smith, Ptacek & Smoll, 1992). This instrument was developed by a psychometric strategy. The search engine here involves the use of confirmatory factor analysis and in the presence of different variables (quantitative, qualitative and binary) was proposed to use the General Coefficient of Similarity (Gower, 1971).

2.2. Data collection

The surveyed athletes were randomly but intentionally selected from the Brazilian judo selections, in order to accept the questionnaires and answer spontaneously. The obtained data were analyzed using the following formula:

$n=p.q.z^2/d^2$

Where: n is the number of elements, p is the estimate of the true proportion of the population; q is the probability of errors and z is the normal distribution coefficient (Thomas et al., 2007). All the athletes who were part of the investigation, signed consent forms freely after thy had been clearly briefed by the researchers. The type of samples obtained were probabilistic samples, stratified samples, proportional and random samples (Thomas et al., 2007). The standouts of different variables were based on a quantitative instrument that required the opinion of professionals in the field. This research was based methodologically on the model followed by the motivational theory of Deci & Ryan (2002). The experimental design followed similar structures with researches that seek to get relevant variables from content analysis of questionnaires, to people who very well understand a particular subject (Escudero-Lopez et al, 2002).

2.3. Validation of data collected

Three experts (Two doctors from the University of Pittsburgh - USA and one from the University of Campinas, Brazil) validated the model data collection. The instrument was constructed and adapted from other inventories that measure motivation towards physical practice based on the theory of Self-Motivation (Decy & Ryan, 1985, 1989, 2000). Recurrent variables highly related to intrinsic and extrinsic motivation in judo athletes were considered.

Other existing theories were consulted including *Perception of Motivational Climate Questionnaire Sport* (PMCSQ) developed by Biddle et al., (1995), Motivations and Interests related to Physical Exercise and Sports Questionnaire – MIAFD designed and used by Almagro et al. (2011), and Mahoney and his coworkers (Mahoney & Avener, 1977; Mahoney et al., (1987) designed and used the Psychological Skills Inventory for Sport (PSIS) and Physical Activity and Leisure Motivation Scale – PALMS, it was also used by Chowdhury, D, (2012).

According to Smith and Smoll, (1991) there are overriding factors such as life stress, need for social support, and psychological coping skills that affect an athlete. These factors represent significant reasons to abandon the practice of judo. Like wise Smith et al, (1995) showed that there are instruments that categorize surveys to assess the social variables in sport contexts in which motivation and resilience was based.

2.4. Population and sample

The samples included female and male member athletes of the Brazilian Confederation of Judo; female and male athletes who obtained medals in high elite events (Olympics and World Championships).

2.5. Sampled population

The sample was composed of 20 women. Their ages were between 20 and 35 years. All athletes had practiced judo from 6 months to four years or more, having begun to compete from 13 to 20 years.

2.6. Data Collection instruments

The Sports Talent Study Center (STSC or in Portuguese CETE) questionnaire was set up by 39 questions (Dos Santos, 2011). The format of the answers varied. There were dichotomous answers (questions: 15, 18, 21, 22, 25), multiple-choice answers (7, 8, 9, 10, 11, 12, 13, 19, 20, 23, 26, 29, 30, 38, 39) and Likert scales answers (14, 15, 16, 17, 28, 31, 33, 34, 35, 36, 37). Buss & Cantor (1989); Mahoney & Avener (1977); Mahoney, (1989); Mahoney et al, (1987); Martens, (1977); Ozer & Reise (1994); Sarason (1978); Smith et al, (1995); Smith & Smoll, (1991) and Williams & Krane (1993) have presented researches involving adaptations of instruments for data collection, with various categories of assessment for social sciences in which we find support for creating our own instrument of analysis.

2.7. Theory and computation

A study of the heterogeneity of the questions was conducted to find possible groupings such as: natural groups, undetermined groups, explicit and direct groups. The process measured the similarity between them and formed internally homogeneous and different groups together. Subsequently, the configuration of the groups found in the data set was specified, trying to explain this arrangement with arguments, generally unrelated to the technique itself and closer to theoretical knowledge of the studied material, as well as connecting with other studies.

When different variables (quantitative, qualitative and binary) were present, the coefficient Gower's similarity was proposed for use (Gower, 1971). This coefficient is a measure of similarity that allows the simultaneous use of quantitative, qualitative and dichotomous variables. Applying this coefficient, the degree of similarity or similarity between individuals to which they have measured qualitative features, quantitative (continuous and discrete) and binary could be determined.

This coefficient is defined as:

$$s_{ij} = \sum_{h=1}^{p1} \left(1 - \frac{|x_{ih} - x_{ij}|}{G_h}\right) + a + \infty / p1 + (p2 - d) + p3$$

p1: number of quantitative variables,

a: number of matches for 1

d: number of matches for 0 of the p2 binary variables

∞: number of matches for the p3 qualitative variables.

G_h: range h-th quantitative variable.

Range = $X_{maximum} - X_{minimum}$

By using this coefficient, it is possible to weigh the variables of a different way depending on the importance attributed to order.

Applying the Gower criterion of similarity, the questionnaires were grouped as follows: items 7 to 13 and 18 to 27 form a first group with greater distances, which made it a quite heterogeneous group. This heterogeneity includes information such as demographics, when they began to practice judo, time spent on practice, judo interest and physical training related to the sport.

A second group referred to as "judo practices" were formed by items 14, 16, 17, 28, 31 and 32 which collected information about training, training conditions and if other physical practice occurs. Items 33, 34, 35, 36 and 37, composed the third group called “satisfaction”. They collected information about states of happiness, self-esteem, autonomy and social relations within the scope of practice of the judo.

Finally, a fourth group called "motivation", consisting of items 38, 39 and 40 was able to gather information on the motivation to practice judo at present and in previous times in relation to the competition. The clustering process was performed using the R software and library StatMatch (D'Orazio, 2016). All these groupings had to be evaluated from a statistical approach through an exploratory factorial analysis and confirmatory factorial to consolidate dimensions.

A descriptive analysis of these groups was performed to find out how the frequencies are distributed through a bar charts and trend graphs of each group. The existence of statistical differences in the groups was an aspect to be detected regarding the gender variable ranking. To explain the existence of rankings by genre the "U" Mann-Whitney test was applied.

Finally, the relationship between the three groups was explored using Spearman's correlation. This coefficient is used when one or both measurement scales are ordinal variables.

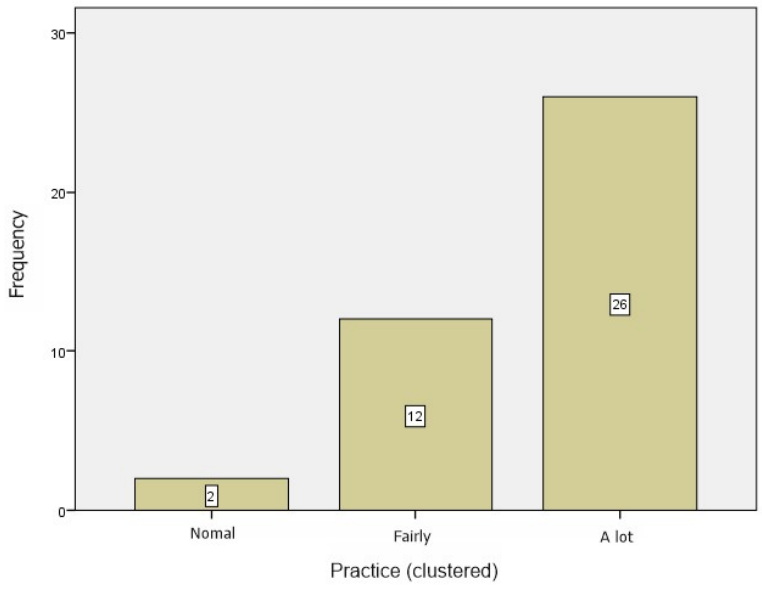
3. Results

3.1. Descriptive analysis

A new variable was created based on the medium frequencies of the questions constituents of each group. Its continuous nature made it possible to study the trend of their scores. To make a visual grouping was needed to establish a set of criteria: 1-2 (nothing), 2-3 (something), 3-4 (normal), 4-5 (enough) and 5-6 (much). Considering the upper limits of these ranges, a new second variable was obtained and then was used for a graphical representation.

In the group "judo practice", the frequencies were distributed as follows, $f_{_normal}$ = 2 (5%), $f_{_fairly}$ = 12 (30%), $f_{_a\ lot}$ = 26 (65%).

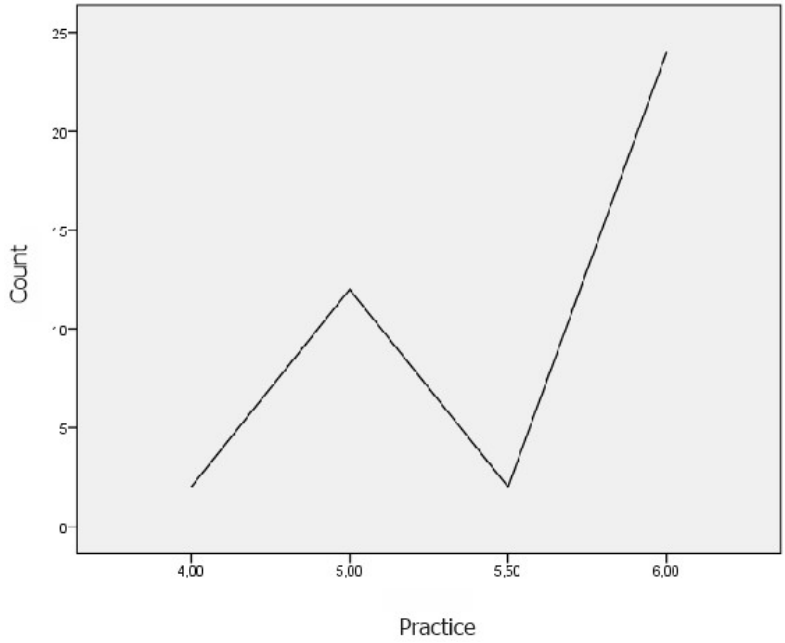
Graphical 1: Representation "Judo practice"



Source: Designed by author

In the trend graph about practice of judo it was observed that more values of "a lot" were frequent. Frequency values was declining in the "fairly" to “normal”.

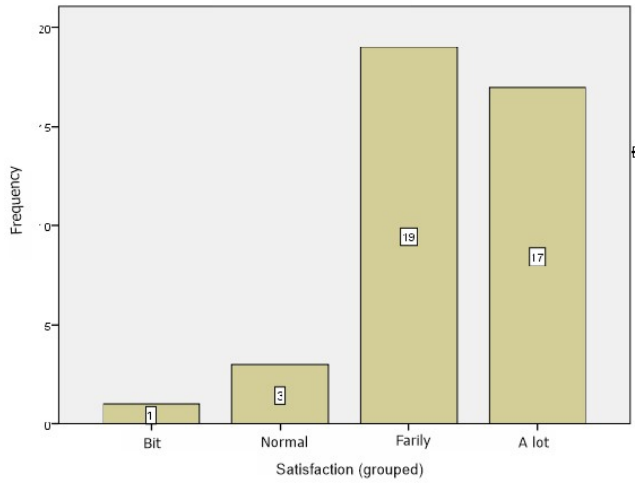
Graphical 2: Representation Practice



Source: Designed by author

An increase in the intermediate scores between 4 and 5 visible in the chart on trends in satisfaction was observed. There was a slight decrease in the values of their highest satisfaction scores.

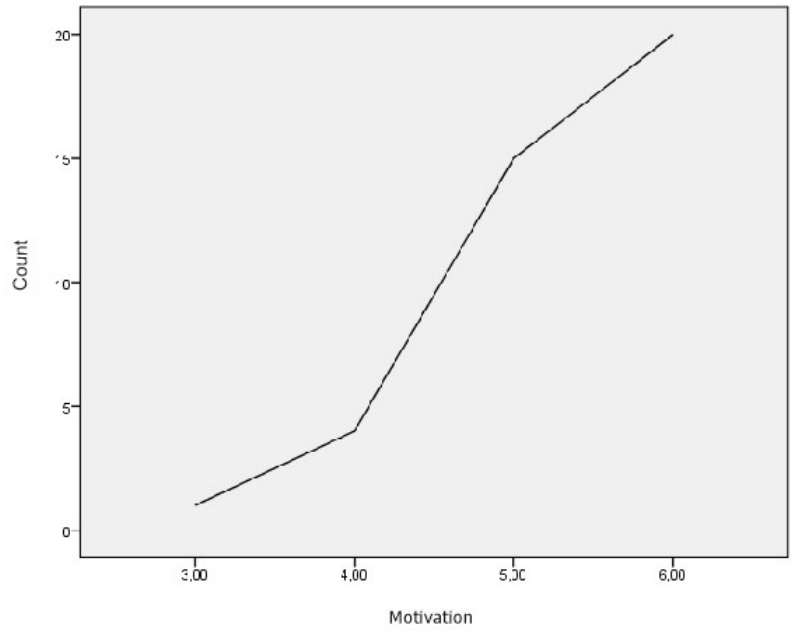
Graphical 3: Representation Satisfaction



Source: Designed by author

Satisfaction grouping shows a frequency distribution, f _bit = 1 (2.5%), f_normal = 3 (7.5%), f_ fairly = 19 (47.5%) and f_ a lot = 17 (42.5%).

Graphical 4: Representation Motivation



Source: Designed by author

The group called motivation presented the following distribution frequency f_bit = 1 (2.5%), f_some = 4, f_farily = 15 (37.5%) and f_lot = 20 (50%).

Trend analysis showed a rising profile demonstrating high motivation.

4. Discussion

Participants who answered the questionnaires were chosen from several selections of Brazilian judo teams. The selection criteria of each athlete were to have won medals in high category international tournaments as global tournaments, Olympic Games as well as classificatory circuits for the ranking of the International Judo Federation (IJF) who qualify for world and Olympic Games (International Grand Prix).

The selection criteria of experts who validated the questionnaires considered broad and experienced prestige professionals in the field of physical and academic activity. To fulfill the requirements of research ethics, the athletes interviewed gave their consent to the publication of data collected anonymously.

For data validation, a non-probabilistic intentional sample was used which includes male and female athletes of judo high level of performance, according to the criteria explained. Questionnaires were sent to 41 judo athletes (20 women and 21 men) with successful history in Olympic Games, World Championships and Grand Prix of the International Judo Federation (IJF). In summary, all data were processed from 41 questionnaires filled and completed.

As explained before, the instruments used were closed-ended questionnaires with relevance scaled answers all composed in 39 items. Each question was marked with X in the desired option. The athlete interviewee responded according to the motivational situation front of a judo competition. The Likert scale was adopted with a 5-point scale in each question. Questions like, “How motivated do you feel in a judo competition”? The scales were: I did not feel any motivation / I did not like it / I did not do it / I did very little. Each option had a scale of 5 matches where 1 corresponded to not correspond at all and 6 was corresponds exactly.

The procedure used to establish the system of indicators followed a hierarchical structure of dimensions, criteria and indicators. Thus, the research team selected the attributes from the literature review. As a result, questionnaires will allow finding answers about motivation, about the beginning of the practice of judo and the factors that have led to remain practicing for years. Finally, the categorization done by researchers through computer programs, shall estimate the importance of motivational factors cited in order to establish success in competitions.

The analysis of the contents of questionnaires will supply data to establish the motivational factors in order to provide teachers and coaches with information to organize their future judo classes and motivate athletes and students. In this way, teachers and coaches may guide their students toward more ambitious judo goals for competitive purposes. Indicators related to variables gender and practice of judo, considering a 0.05 significance level as in social sciences and psychology, according to "U" Mann Whitney test did not present significant statistical differences W = 201.5, p-value = 0.9504, confidence interval 95% [-1.251879e-05 and 5.068582e-0.

In reference to "gender" and "satisfaction" groups, no significant differences occurred (W = 185, p-value = 0.6638) even with confidence intervals of 95% [-9.999970e-01 and 1.612612e-05].

In the last group called "motivation" significant differences in gender was not observed (W = 248, p-value = 0.1473), with confidence intervals at 95% [-5.877541e-05 and 9.999562e-01].

In the correlation between "judo practice" group and the "motivation had a value equal to rho 0.37, p-value = 0.0177 according to the Spearman correlation. This value indicates a statistically significant relationship between both groups. This showed that, motivation induces the practice of judo.

In the case of the groups "motivation" and "satisfaction" they have a value of rho equal to 0.13, with a p-value = 0.4202, which meant no correlation between them. Motivation and satisfaction in athletes of this group appeared to have no direct relationship. Finally, groups of "judo practice" and "satisfaction" had a positive and statistically significant Spearman correlation rho = 0.47, and p-value = 0.0022. It means that the more they practice judo, the greater the degree of satisfaction.

5. Conclusions

As in many social sciences publications, a lack of proper psychological instruments to measure motivational aspects of athletes in a wide variety of Olympic combat sports was confirmed herein. These psychological instruments, for their particular oriental philosophy (Judo and Taekwondo) difficult the data interpretation related to resilience of many years and motivation of the sport. These aspects were confirmed because two of the authors of this study belong to high performance athlete's elite and perceived that besides economic factors, motivational factors are hard to measure.

6. End Notes

Prospective works are expected to become feasible in developing proper tools for data collection considering the *philosophy* variable and not confronting economic *factor* variable. Then, during the data interpretation phase, both variables are considered to discover how the intrinsic motivational factors influence occurs. This hypothetical confrontation probably results in a never before reported outcomes.

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