

ANALYSIS OF THE DURATION OF POINTS AND THEIR RECOVERY INTERVALS IN AMATEUR SQUASH MATCHES: CONSIDERATIONS BASED ON THE REALITY OF THE GAME

Rafael Alkmin Reis

Serviço Social do Comércio – Sesc SP
Jundiaí, São Paulo
<http://lattes.cnpq.br/0162287372122724>

Jonatan Pereira Miyamoto Luna

Serviço Social do Comércio – Sesc SP
Jundiaí, São Paulo
<http://lattes.cnpq.br/1779154247536638>

All content in this magazine is licensed under a Creative Commons Attribution License. Attribution-Non-Commercial-Non-Derivatives 4.0 International (CC BY-NC-ND 4.0).



Abstract: The aim of this work is to analyze, in amateur squash matches, the duration of points and the respective recovery intervals. Four matches of squash, men's category, fourth-class amateur level from the state of São Paulo were evaluated. The following variables were quantified: total game time (T_{Total}), effective game time (T_{Game}), effective pause time (T_{Pause}), duration time for each point (T_{Pnt}) and interval time between points (T_{Int}). The mean, standard deviation, minimum and maximum of all variables were calculated. T_{Pnt} and T_{Int} were subjected to exploratory data analysis using the histogram graphic. T_{Total} presented an average of 30 minutes and 48 seconds. From this time, 18 minutes and 24 seconds correspond to T_{Game} and 12 minutes and 24 seconds to T_{Pause}. T_{Pnt} (n=338) had a mean duration of 13.06 ± 10.54 sec, while T_{Int} (n=320) had a mean duration of 9.28 ± 3.28 sec. From the histograms it can be seen that T_{Pnt} presented 63.91% of its distribution with a duration of up to 12 sec, and only 16.57% of the points lasted more than 20 sec. T_{Int}, on the other hand, showed 67.81% of its distribution between 5 and 10 seconds, while only 7.5% of pauses were longer than 14 seconds. Analyzing this series of amateur squash matches, it is possible to identify significant differences in the game of this competitive level compared to the professional reality of this sport. It is expected that, with this evidence, it will be possible to plan more specific interventions in physical and technical preparation of amateur and professional squash players.

Keywords: squash, intermittent sport, physical training.

INTRODUCTION

Squash is a racket sport played on a closed court, with dimensions of 9.75 meters long and 6.40 meters wide. It is an intermittent sport, characterized by repeated short high-intensity

efforts (accelerations, decelerations and changes in direction), alternated by periods of recovery (JAMES, 2022). This type of sport has a high degree of unpredictability, with physical, technical, tactical and psychological demands that are difficult to simulate in a laboratory or other controlled environment. This way, studies based on the analysis of the game itself are important for understanding the real requirements of this type of sport (SMEKAL, 2000).

In the case of squash, the literature indicates that, in a professional match, the duration of the points can vary considerably, ranging from 3 to even more than 40 seconds. The recovery intervals between points have an average of 7 to 8 seconds (GIRARD, 2007). However, some studies suggest that the technical level of the athletes can influence the duration of points (DOCHERTY, 1982).

Considering the universe of intermittent sports, it is common to prescribe high-intensity interval exercises to improve the physical and technical condition of players. There are several possibilities for applying this type of training. Traditionally, the workloads are adjusted according to the sport and the training period in which the athlete is (BUCHHEIT, 2013). The challenge facing coaches and physical trainers, therefore, is to adapt the variables of this type of training, for the moment of preparation and the real physiological demand of the sport.

Thus, this work intends to analyze the duration of points and their respective recovery intervals in amateur squash matches. The reality of the amateur game is discussed and compared to the professional one, in addition to possible considerations for the adequacy of physical training to the specificity of this sport.

METHODS

DATA ACQUISITION

Four matches of the São Paulo amateur squash circuit were filmed in 2022, male category, fourth class. To acquire the images, a smartphone, Samsung brand, model Galaxy A51 was used. The videos were watched in order to measure the following variables: TTotal, constitutes the total duration of the match. TGame, represents the sum of the time of all points played in the same match. TPause, portrays the sum of recovery times between each point in the same match. TPnt, represents the duration of each point. TInt, constitutes the recovery time between each point. The respective values were tabulated in Microsoft Excel 2013 software.

STATISTICAL TREATMENT

Initially, mean, standard deviation, minimum and maximum of all study variables were calculated. To complement the analysis, TPnt and TInt underwent exploratory analysis of their respective distributions. For this purpose, the technique of graphical representation in histograms was used with the cumulative percentage of their intervals. All statistical treatment was performed using Microsoft Excel 2013 software.

RESULTS

Table 1 presents the average, minimum and maximum values for the variables: TTotal, TGame and TPause. These values are expressed in minutes and seconds.

Table 1. Mean, minimum and maximum values for the variables: TTotal (n=4), TGame (n=4) and TPause (n=4) calculated in minutes and seconds.

	Average	Minimum	Maximum
Total	30min and 48sec	25min and 8sec	37min and 36sec
TGame	18min and 24sec	14min and 53sec	23min and 1sec
TPause	12min and 24sec	10min and 15sec	14min and 35sec

Considering the four games, TPnt had a total of 338 points played, while TInt had 320 recovery periods. Table 2 shows the mean, standard deviation, minimum and maximum values for these variables.

Table 2. Mean \pm standard deviation, minimum and maximum values for the variables TPnt (n=338) and TInt (n=320) calculated in seconds.

	Mean \pm SD	Minimum	Maximum
TPnt (sec)	13.06 \pm 10.54	2	73
TInt (sec)	9.28 \pm 3.28	3	23

Figures 1 and 2 represent the histograms of TPnt and TInt respectively. On X axis are the categories chosen for each variable. For TPnt, it was decided to group the variable in intervals every 4 seconds. For TInt, the categorization took place at intervals every 2 seconds. The main Y axis shows the frequency of selected intervals, while the secondary Y axis shows their cumulative percentage.

From the histograms, it is possible to have a deeper reading of the distribution of these variables. Regarding TPnt, 63.91% of the points lasted up to 12 seconds, with only 16.57% lasting more than 20 seconds. Regarding the TInt, 67.81% of the intervals lasted from 5 to 10 seconds, and only 7.5% of these periods were longer than 14 seconds.

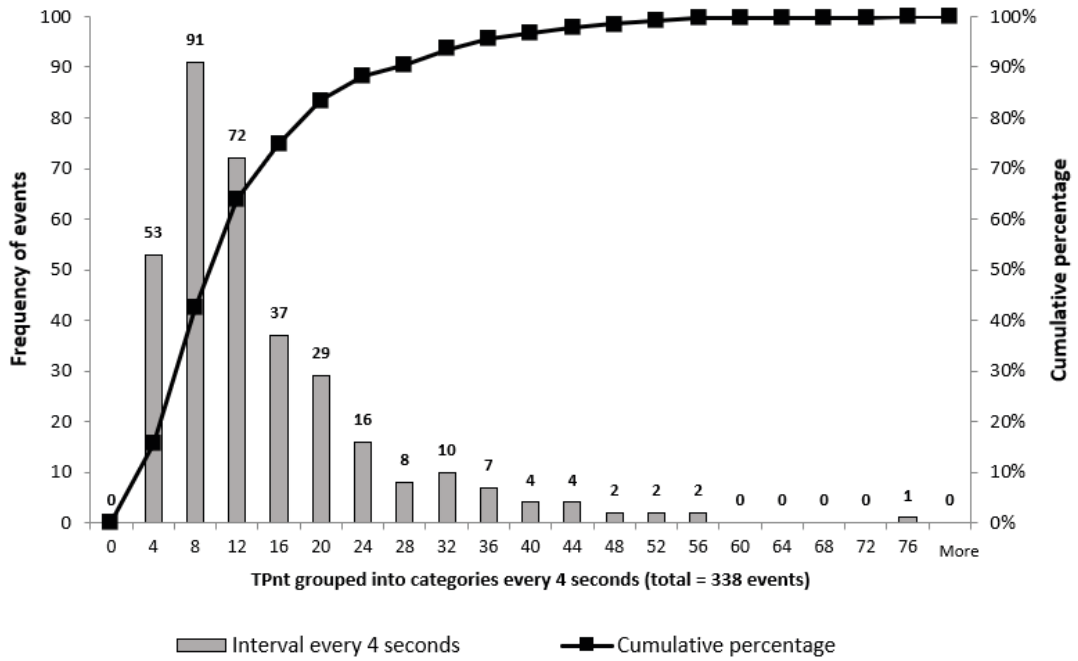


Figure 1. TPnt Histogram

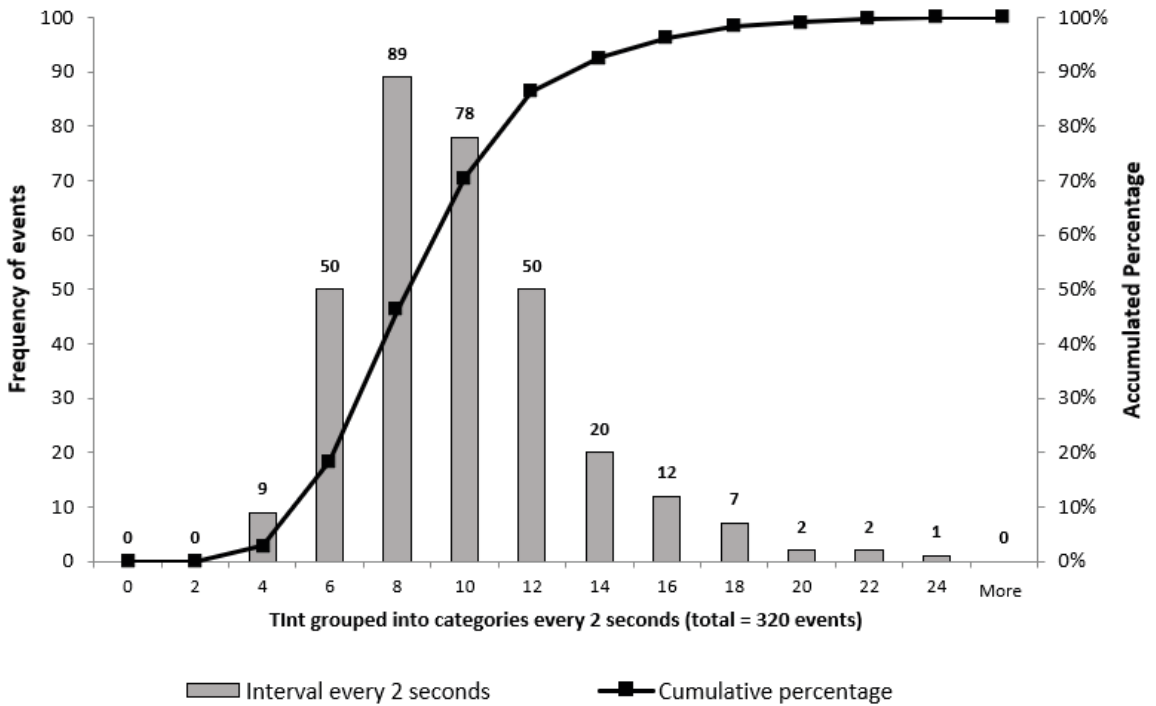


Figure 2. Tint Histogram

DISCUSSION

The results disclosed here are a small sample of the wide universe of amateur squash practice. Even in the case of a limited selection, only four matches, it is possible to outline how this sport manifests itself within this competitive category.

The matches had an average duration of 30 minutes, ranging from 25 to 37 minutes. Of these 30 minutes, approximately 18 are for effective play and 12 are for recovery between points. From these results, we can infer that in amateur squash matches, approximately 60% of the total time is spent on high-intensity efforts. This proportion is similar to that found in senior athletes (JONES, 2018), but it is slightly lower when compared to professional athletes. In elite matches, Girard (2007) found a relationship of 69.7% between effective playing time and total playing time. Another relevant finding in the work of Girard (2007) is that the matches had an average duration of 25 minutes, varying in minimum and maximum levels of 20 and 30 minutes. These findings indicate that, as the level of play increases, the density of the game also increases, i.e., the match time is increasingly occupied by typical game efforts and less by the recovery periods between points.

Observing the TPnt variable and its respective histogram, a high concentration of events lasting up to 12 seconds is noted, 63.91% of the total. The disputes over 20 seconds represent only 16.57%. It can be seen from these evidences that, in amateur athletes, there is a high probability that points have a short duration. A distinct trend is observed in elite matches. Girard's work (2007) reveals a more homogeneous distribution of points in this kind of athletes. The author found that 35% of the points lasted up to 10 seconds and 33% were longer than 21 seconds. These notes demonstrate that elite matches present greater unpredictability in the duration of

the points, while in amateur athletes, with a lower technical level, the points tend to have a reduced duration.

As for the recovery time between points, TInt, we obtained an average duration of 9.28 ± 3.28 seconds, with 67.81% having a duration of 5 to 10 seconds. These results show more subtle differences compared to elite athletes (GIRARD, 2007, GIBSON, 2019). In these studies, the reported recovery period was approximately 8 seconds. Despite the smaller magnitude, the difference in recovery time between amateur and professional athletes also suggests a greater game density when practiced at a high level. Thus, as the technical level of the players increases, the recovery time between points decreases. Elite athletes tend to take less recovery time in their matches.

The indications above reveal an important sign in differentiating an amateur squash match from a professional one. These findings certainly pave the way for greater individualization of physical training for both reported categories.

With regard to physical preparation for squash, the high-intensity interval training methodology emerges as an important alternative given the specificity of the game. However, its effectiveness depends on a number of factors, especially the correct interpretation of the sports requirements (BUCHHEIT, 2013). About to the correct interpretation of the squash requirements, the present work expects helping the decision-making process of coaches and physical trainers. The detailed description of an amateur squash match, presented here, represents substantive evidence capable of a reasonable distribution of training loads. Traditional variables of high-intensity interval training, such as volume, intensity, number of series, duration of series, recovery time, among others, can be, from here, rationally dimensioned from the reality of the game, for

both, amateur or elite athletes of this sport.

CONCLUSION

Analyzing this set of amateur squash matches, it is possible to identify significant differences in the game at this competitive level compared to the professional reality of the sport. As the technical level of the sport increases, so does the density of the game. Thus, elite matches have proportionally longer points and shorter recovery periods

between disputes. It is expected that, with this evidence, it will be possible to plan more specific interventions in the physical and technical preparation of amateur and professional squash athletes.

THANKS

We thank Sesc SP, Social Service of Commerce, regional São Paulo, Jundiaí unit, for supporting the development of this work.

REFERENCES

- BUCHHEIT, Martin. et al. **High-intensity interval training, solutions to the programming puzzle: Part I: cardiopulmonary emphasis.** Sports medicine (Auckland, N.Z.) v. 43, n. 5, p. 313-38, 2013.
- DOCHERTY, D. **A comparison of heart rate responses in racquet games.** Brit. J. Sports Med, v. 16, n. 2, p. 96-100, Junho 1982.
- GIBSON, Neil. et al. **Physical preparation for elite-level squash players: monitoring, assessment, and training practices for the strength and conditioning Coach.** Strength and Conditioning Journal, v. 41, n. 3, p. 51-62, 2019.
- GIRARD, Olivier. et al. **Game analysis and energy requirementsl of elite squash.** Journal of Strength and Conditioning Research, v. 21, n. 3, p. 909-914, Agosto 2007.
- JAMES, Carl. et al. **Physiological and Performance Correlates of Squash Physical Performance.**Journal of sports science & medicine. v. 21, n. 1, p. 82-90, 15 Fevereiro 2022.
- JONES, Thomas, Williams. et al. **A review of the performance requirements of squash.** International journal of sports science and coaching, v. 13, n. 6, p. 1223-1232, 2018.
- SMEKAL, Gerhard. et al. **A physiological profile of tennis match play.** Medicine and science in sports and exercise, v. 33, n. 6, p. 999-1005, 2001.