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Effects and factors of multiple practice session for a sports player carrier achievement

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Abstract - Purpose: ***Sports players reach their peak positions by putting their physical and mental efforts into practice. Few of them are achieving higher-level certificates and jobs. Most sportspeople have stopped their careers and started a new lifestyle. Method: The data from a physical education institute was used to analyze the performance of male and female sports students' daily practice sessions. The 258 students from various sports, like volleyball, kabaddi, basketball, weightlifting, cricket, football, and athletics, were considered for this analysis. Result: The observed frequency data showed fewer males and females practicing one session daily, and more students were doing two sessions daily. Some average numbers of students are practicing three times a day and earning more strength and skills. The achievements of the three-session practicing students are higher than the data. Chi-square analyses were performed to detect differences in the number of practice sessions between the sexes. The significant difference for gender and number of practice sessions was 0.05, respectively. Conclusion: This research should help players and coaches understand the importance of three practice sessions daily. Therefore, training sessions could be more position-specific, maximising the player's physiological outcome in order to optimise performance.***

Keywords - Physical education, sessions, chi-square technique, hypothesis

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INTRODUCTION

Sport is any competitive or organized physical activity or game that maintains or improves physical ability and skills while entertaining participants and spectators (van Dijk et al., 2022). Participation in sports, whether on a casual or more structured basis, has been shown to have positive effects on physical health (Cortés et al., 2017). There are countless sports to choose from, ranging from those contested between two individuals to those involving hundreds of people playing in teams or as individuals simultaneously (Buekers, 1991; Franks & Moore, 1969; Puhl et al., 1982). In some sports, such as racing, multiple competitors may compete concurrently or sequentially to determine a single winner (Cayres et al., 2015). In others, the contest (a match) is between two teams, each seeking to surpass the other. Some sports permit a "tie" or "draw," in which there is no single winner, while others employ tie-breaking techniques to ensure one winner and one loser (Cumming & Quinton, 2022). A tournament is a series of competitions that produce a champion. Many sports leagues determine an annual champion by scheduling games during the regular season and, in some circumstances, playoffs.

The roots of periodization can be traced back to Hans Selye's General Adaption Syndrome (GAS). The General Adaptation Syndrome (GAS) describes three fundamental stages of the stress response:

1. The Alarm stage involves the initial shock of the stimulus on the system.
2. The Resistance stage involves the system's adaptation to the stimulus.
3. The Exhaustion stage is when repairs are inadequate, and system function decreases.

The core of periodic training prevents the body from entering the depletion stage while remaining in the resistance stage (Fair & Champa, 2022; Green, 2000; Parker & Curtner-Smith, 2005). By adhering to cycle training, the body can recover from considerable stress before engaging in new training. The objective of periodization in athletics is to lessen stress at the end of the resistance stage, so the body has time to recover. Thus, the exhaustion phase does not diminish the gains; the body can recover and remain above its initial equilibrium position

(Kulinna et al., 2006; Nelson et al., 2013). The subsequent round of increased stimulus further enhances the response, and the equilibrium point rises after each cycle.

Before a competition or performance, training should be coordinated and planned using the macrocycle, mesocycle, and microcycle (Jenkinson et al., 2014; Makopoulou, 2018). It must consider the athlete's talent, performance in exams or competitions, and the competition schedule (Cox et al., 1982; Eom & Schutz, 1992b; Starkes et al., 1995). It must be straightforward, provocative, and, most importantly, adaptable so that its content may be tweaked to accommodate the athlete's rate of improvement. A macrocycle refers to an entire season of training. This annual strategy aims to peak for the year's goal competition (Chow et al., 2021). The macrocycle consists of three phases: preparation, competition, and transition. A mesocycle is a specific training block, such as a strength or endurance phase, within a season. A mesocycle is also several consecutive weeks during which the training program emphasizes the same physical adaptations, such as muscle mass and anaerobic ability (Kirk et al., 1997; Warburton et al., 2020). During the preparatory phase, a mesocycle typically consists of four to six micro-cycles; however, during the competitive phase, it consists of two to four micro-cycles, depending on the competition's schedule. A mesocycle is a specific training block, such as a strength or endurance phase, within a season (Uddin et al., 2020). A mesocycle is also several consecutive weeks during which the training program emphasizes the same physical adaptations, such as muscle mass and anaerobic ability (Eom & Schutz, 1992a; Fellingham et al., 1994; Pfeifer & Deutsch, 1981). During the preparatory phase, a mesocycle typically consists of four to six micro-cycles; however, during the competitive phase, it consists of two to four micro-cycles, depending on the competition's schedule (Wassenaar et al., 2019).

Sports management is a business discipline that focuses on sports and recreation. Sports management encompasses any skills associated with planning, organizing, directing, controlling, budgeting, leading, and assessing any organization or corporation in the sports industry (Kok et al., 2020; Polet et al., 2019). The Physical Education Department is the origin of the area of sport management. Over time, the field has become anchored in the history and sociology departments. In 2018, esport management had grown to a $4.5 billion sector over the past decade due to the expansion of sport management. Opportunities in sport management have increased to encompass sports marketing, sports media analytics, sports sponsorships, and the management of sports facilities (García-González et al., 2019; Røset et al., 2020). Various schools and universities offer bachelor's and master's degrees in sport management (Hermens et al., 2017; Lagestad & Mehus, 2018; van Abswoude et al., 2018). When researching the influence of sports degrees, it is essential to focus on sports science. The average salary for sport management positions in the United States is $41,648 annually. In India, sport management occupations involve working for professional programs such as the railways, banks, postal service, ICF, police, customs, electricity, GST, and other professional or amateur sports leagues in terms of marketing, health, and promotions. Jobs in sports management include the following positions: athletic coach, athlete development specialist, athletic director, business development coordinator, contract administrator, etc (Tolgfors, 2020).

A chi-squared test (χ2 test) is a statistical hypothesis test used to study large sample sizes for contingency tables (Pavlovic et al., 2021). In simpler terms, this test aims to determine if two categorical factors (two dimensions of the contingency table) influence the test statistic independently (values within the table) (Bird & Karageorghis, 2020; Groffik et al., 2020; Takamido et al., 2021). Specifically, Pearson's chi-squared test and variations are true when the test statistic is chi-squared distributed under the null hypothesis (Gao et al., 2021). Pearson's chi-squared test is utilized to assess if there is a statistically significant discrepancy between the predicted and observed frequencies in one or more categories of a contingency table (Lucena Filho et al., 2022; Persson et al., 2021; Therell et al., 2022).

Therefore, the present study's aim was to make a detailed record of the number of practice sessions done by male and female sports players in a day in the physical education institute. We hypothesized that there would be differences between the sexes and practice sessions. It was also anticipated that players who practiced for more sessions (such as three sessions) would likely achieve and perform better.

METHODS

We analyzed the three-year data from 153 male and 105 female sports professional students during 2020–2022 at a physical education institute in Tirunelveli, India. The students used to practice for one, two, and three sessions in a day to achieve in the top university and national games (Donnelly et al., 2022). The two- and three-session practicing students' achievements are greater than those of single-session students. Especially three session practicing students easily achieved more universities and national game awards (Goodyear et al., 2019). Table 1 shows the observed results of several male and female students spending daily practice sessions in the physical education institute.

Table 1. Observed results of male and female students spending daily practice sessions

Observed results				
Students	1 session	2 sessions	3 sessions	Total
Male	36	72	45	153
Female	22	51	32	105
Total	58	123	77	258

In a pilot study, we compared male and female players with several practicing hours and found the average number of practicing sessions to depend on the student type (Rekaa et al., 2019). The Figure 1. displays the gender distribution across the practice sessions.

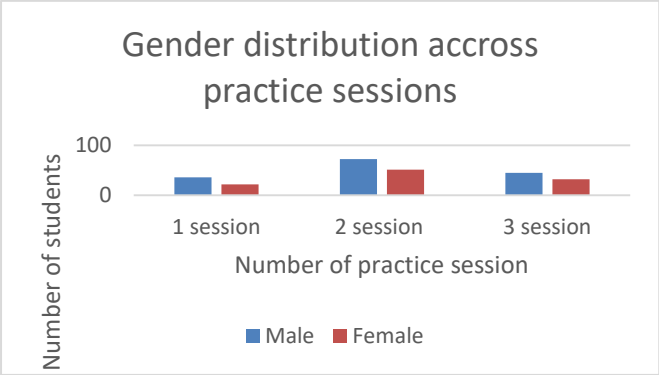

Figure 1. Gender distribution across practice session

In a single practice session, either the morning or evening, the players couldn't spend all the time on strengthening, fitness, jumps, ideas, meditation, stretching, agility, and game practice (Van den Berghe et al., 2014). The well-trained person is used to practicing in two or three sessions, compulsorily, under the guidance of the coach. Particularly learning and practicing three sessions in a day promotes the players in all kinds of sports (Bailey, 2005; Renshaw et al., 2010). The appropriate schedule for the three sessions of practicing players is that in the morning, during the first session between 07.00 and 08.00 a.m., they do the stretches. In the second session, 09.30–11.00 a.m., they used to do their agility, strengthening, weighting, and jumping workouts, and in the third session, between 5.00–07.00 p.m., they executed their strength and effort in their respective sports. The three-session periodic practice benefits the players in every aspect of sports, i.e., muscle strength, fitness, agility, ability, and others (Barba-Martín et al., 2020; Bores-García et al., 2021; Quennerstedt, 2019). It is also the major reason they achieve in the university, national, and international games.

RESULTS

Based on the student's practice with this parameter, we need to perform a test of independence using a chi-square distribution (Hutzler et al., 2019). So, the first thing we need to do is complete the contingency table. The null hypothesis H_0 is that the number of practice sessions is independent of the student's gender. The alternative hypothesis H_1 is to test if the number of practice sessions depends on the type of student. To calculate the degrees of freedom df=(R-1) (C-1) is used (Haegele, 2019). Our contingency table has two rows for the males and females and three columns for the practice sessions. The degrees of freedom in this study are 2. Therefore, the test of independence is typically a right-cell test. The shape of the chi-square distribution, critical value, and rejection region is displayed in Fig. 2. The area to the right is the area of the rejection region, and this is going to be alpha (α), which is 0.05, respectively (Ali et al., 2021; Tilga et al., 2019). In this study, we determined our critical chi-squared value and compared it with the calculated chi-square value. If our calculated chi-square value falls in a rejection region, we are going to reject the null hypothesis. If it falls below the critical value, we are not going to reject the null hypothesis. In the chi-square distribution table, we had 2 degrees of freedom, and for the area to the right of the critical value, we said it was 0.05 alpha (Lemes et al., 2021; Pollock et al., 2021). This gives us our critical value of 5.99, marked in Figure 2.

Table 2 displays the expected results of male and female students spending daily practice sessions. The expected values were found through the formula $E = \frac{(Rt)(Ct)}{N}$, its going to be the row total the column total divided by N.

Table 2. Expected results of male and female students spending daily practice sessions

Expected results				
Students	1 session	2 sessions	3 sessions	Total
Male	34.39	72.94	45.66	152.99
Female	23.6	50.05	31.33	104.98
Total	57.99	122.99	76.99	257.97

The calculated chi-square value is found through the formula

$$\chi^2 = \sum(O - E)^2 / E$$

The calculated chi-square value, C_v = 0.228, lies to the left of the critical value in a right-tailed test. The calculated chi-square value falls in the critical region.

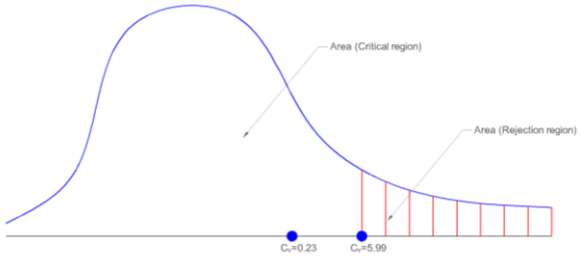

Figure 2. Chi-Square Distribution Graph (critical region and rejection region)

CONCLUSION

The data, corresponding to the number of practice sessions done by the male and female players, were solved through the chi-square test. The table chi-square value (χ^2=5.99) and the calculated chi-square values (χ^2=5.99) were obtained. The calculated chi-square value is less than the table value, which lies in the critical region. It has strong evidence to suggest that the number of sessions played by the players is independent of the type of student. So, we can see that male and female players spend much time practicing for two sessions a day in the institute.

Similarly, most of the achievements were done by the players, who did three practice sessions daily. The null hypothesis is always what you currently believe to be true. So, we have to believe that the rows are independent of the columns, or, in other words, the gender is completely independent of the practice session you support. The practice session is independent of gender; gender does not influence which practice session you support. The value of 0.228 doesn't fall in the rejection region, which means we cannot reject the null hypothesis. We fail to reject the null hypothesis. In other words, we accept the null hypothesis. We have to accept that the practice session is independent of gender. Gender does not have any influence on your practice session preferences. This study provided a deeper understanding of the performance of sports person and their several training sessions.

Implications for coaches

Every type of sportsman must train three times every day and take one day off per week. Three daily training sessions are required for the overall development of an individual or group. The coaches are more accountable for monitoring the students' achievements. This idea, which follows logically from the findings of this study, is absolutely at odds with the normal practice sessions undertaken before to official events. Similarly, with sufficient time, coaches can train endurance, agility, strengthening, jumps, workouts, stretching, and games easily and quickly increase their skills.

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Declarations

Ethical Approval

Not Applicable

Competing interests

The author(s) declared no competing interest with respect to the research, authorship, and/or publication of this article

Authors' contributions

R Ananda Ravi - Conceptualization, Investigation, Methodology, Writing Original Draft, Visualization and Data Curation.

S Dinesh Philip Vinoth – Resources, Formal analysis, Validation, Writing - Review & Editing, Project Administration, Supervision

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Availability of data and materials

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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