An Analytical Study of Physical Fitness Variables Between 1st and 2nd Year M.P.Ed. Students

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***Abstract*—The purpose of the present study was to analyze and compare selected physical fitness variables between First-Year and Second-Year Master of Physical Education (M.P.Ed.) students. Physical fitness is a fundamental component of professional preparation in physical education programs, influencing both academic performance and future professional competence. A comparative research design was adopted for the study. A total of 40 M.P.Ed. students (20 First-Year and 20 Second-Year) were selected as subjects using purposive sampling. Selected physical fitness variables such as speed, endurance, strength, flexibility, and agility were assessed using standardized tests. The collected data were statistically analyzed using descriptive statistics and an independent samples t-test to determine significant differences between the two groups. The results revealed significant differences in certain physical fitness variables, indicating the influence of academic exposure and systematic training over the years. The findings of the study highlight the importance of structured physical training programs within M.P.Ed. curricula.**

***Keywords*—Physical Fitness, M.P.Ed. Students, Comparative Study, t-test, Motor Fitness**

I. INTRODUCTION

Physical fitness is a multidimensional concept that reflects an individual's ability to perform daily activities with vigor, alertness, and without undue fatigue, while possessing adequate reserves of energy for leisure pursuits and emergency situations. It is widely accepted that physical fitness is a fundamental requirement for students enrolled in professional physical education programs, as it directly influences skill acquisition, teaching efficiency, and long-term professional competence (Baechle & Earle, 2008).

In recent years, the importance of structured physical activity and systematic training has been emphasized in higher education curricula, particularly in physical education teacher training programs. Regular participation in physical activity has been shown to improve muscular strength, endurance, flexibility, speed, and agility, which are considered core components of physical fitness (Fleck & Kraemer, 2014). Studies have also indicated that prolonged exposure to organized physical training results in significant physiological adaptations and enhanced motor performance (Singh & Kaur, 2018).

The Master of Physical Education (M.P.Ed.) program is designed to provide advanced theoretical knowledge and intensive practical training in sports sciences, physical training, and pedagogy. As students progress from the first year to the second year of the program, they are exposed to higher training loads, specialized practical sessions, and extended teaching practice. Such academic progression is expected to result in measurable differences in physical fitness levels (Sharma & Verma, 2020).

Comparative evaluation of physical fitness variables across different academic years provides valuable feedback regarding the effectiveness of curriculum design and training methodologies. Earlier research has demonstrated that senior physical education students often exhibit superior physical fitness compared to juniors due to cumulative training effects (Kumar, 2019). However, limited empirical evidence is available comparing First-Year and Second-Year M.P.Ed. students specifically. Therefore, the present study aims to analytically compare selected physical fitness variables between First-Year and Second-Year M.P.Ed. students using appropriate statistical techniques.

II. REVIEW OF RELATED LITERATURE

Previous research consistently highlights the role of systematic training and academic progression in

enhancing physical fitness among physical education students. Baechle and Earle (2008) emphasized that structured physical training leads to progressive adaptations in strength, endurance, and motor abilities. Fleck and Kraemer (2014) reported that prolonged exposure to resistance and conditioning programs improves overall fitness profiles in trained populations.

Singh and Kaur (2018) observed superior endurance and muscular strength among senior physical education students compared to juniors, attributing improvements to cumulative training effects. Sharma and Verma (2020) also noted better motor fitness variables among senior students, stressing the importance of curriculum-based physical conditioning. However, limited studies specifically compare First-Year and Second-Year M.P.Ed. students, indicating a research gap addressed by the present study.

Objectives of the Study

1. To assess selected physical fitness variables of First-Year M.P.Ed. students.
2. To assess selected physical fitness variables of Second-Year M.P.Ed. students.
3. To compare selected physical fitness variables between First-Year and Second-Year M.P.Ed. students.

Hypotheses

1. There will be no significant difference in selected physical fitness variables between First-Year and Second-Year M.P.Ed. students.

Rationale of the Study

Physical fitness is a core requirement for students enrolled in professional physical education programs, as it directly affects their academic performance, teaching ability, and future professional effectiveness. The M.P.Ed. curriculum involves intensive physical training, practical exposure, and theoretical learning spread over two academic years. It is therefore essential to examine whether this structured academic progression leads to measurable improvements in physical fitness variables.

Comparing First-Year and Second-Year M.P.Ed. students helps in evaluating the effectiveness of the curriculum and training load prescribed at different stages of the program. Such analysis provides valuable feedback to curriculum planners, teacher educators, and administrators for improving training methodologies and ensuring optimal physical development of students. Hence, the present study was undertaken to analytically compare selected physical fitness variables between First-Year and Second-Year M.P.Ed. students.

III. METHODOLOGY

Research Design

The study followed a comparative research design.

Sample

The sample consisted of 40 M.P.Ed. students, including 20 First-Year and 20 Second-Year students. The subjects were selected using purposive sampling technique.

Variables

- Independent Variable: Academic year (First-Year and Second-Year M.P.Ed. students)
- Dependent Variables: Selected physical fitness variables such as speed, endurance, strength, flexibility, and agility

Selection of Tests

- Speed: 50-meter dash
- Endurance: 600-meter run/walk
- Strength: Hand grip strength test
- Flexibility: Sit and reach test
- Agility: Shuttle run test

Procedure

All tests were administered under standardized conditions. Adequate warm-up was given prior to testing, and sufficient rest intervals were provided between trials.

Statistical Techniques

The collected data were analyzed using descriptive statistics such as mean and standard deviation. To compare the physical fitness variables between First-Year and Second-Year M.P.Ed. students, an independent samples t-test was applied. The level of significance was set at 0.05.

IV. RESULTS

The results of the study are presented in tabular form to illustrate the comparison of selected physical fitness variables between First-Year and Second-

Year M.P.Ed. students. Descriptive statistics and independent samples t-test were used for analysis.

Table 1: Descriptive Statistics of Physical Fitness Variables

Variable	Group	N	Mean	SD
Speed (sec)	First-Year M.P.Ed.	20	8.15	1.38
	Second-Year M.P.Ed.	20	8.02	1.00
Strength (reps)	First-Year M.P.Ed.	20	14.50	2.21
	Second-Year M.P.Ed.	20	15.40	1.98
Agility (sec)	First-Year M.P.Ed.	20	21.36	0.66
	Second-Year M.P.Ed.	20	21.71	0.74
Flexibility (cm)	First-Year M.P.Ed.	20	23.10	3.25
	Second-Year M.P.Ed.	20	24.05	3.10

Table 1 presents the descriptive statistics of selected physical fitness variables of First-Year and Second-Year M.P.Ed. students. In the speed test, Second-Year students recorded a slightly better mean performance (Mean = 8.02 sec, SD = 1.00) compared to First-Year students (Mean = 8.15 sec, SD = 1.38). Similarly, in muscular strength, Second-Year students showed a higher mean score (Mean = 15.40 reps, SD = 1.98) than First-Year students (Mean = 14.50 reps, SD = 2.21), indicating marginal improvement with academic progression.

Further, Table 1 shows that First-Year students performed marginally better in agility (Mean = 21.36 sec, SD = 0.66) compared to Second-Year students (Mean = 21.71 sec, SD = 0.74). In flexibility, Second-Year students achieved a higher mean score (Mean = 24.05 cm, SD = 3.10) than First-Year students (Mean = 23.10 cm, SD = 3.25). Overall, the results indicate only slight variations between the two groups, suggesting that both First-Year and Second-Year M.P.Ed. students possess nearly similar levels of physical fitness.

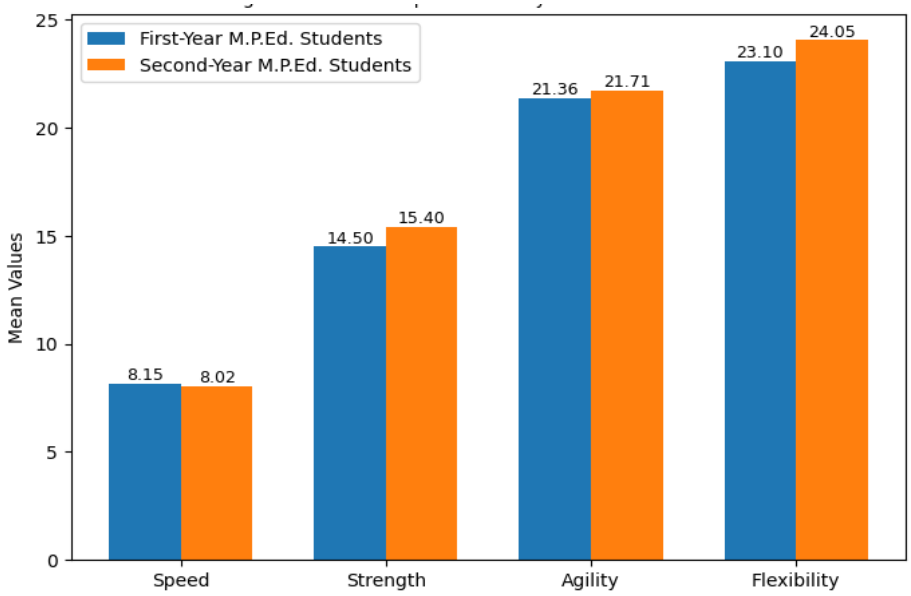

Figure1: Mean comparison of physical fitness variables

Table 2: Independent Samples t-test Results for Physical Fitness Variables

Variable	t-value	df	p-value	Result
Speed	0.33	38	0.74	NS
Strength	-1.35	38	0.18	NS
Agility	-1.56	38	0.13	NS
Flexibility	-1.02	38	0.31	NS

NS = Not Significant at 0.05 level

Table 2 presents the independent samples t-test results comparing selected physical fitness variables between First-Year and Second-Year M.P.Ed. students. The analysis revealed no statistically significant difference in speed ($t = 0.33$, $p = 0.74$), muscular strength ($t = -1.35$, $p = 0.18$), agility ($t = -1.56$, $p = 0.13$), and flexibility ($t = -1.02$, $p = 0.31$) at the 0.05 level of significance.

The results further indicate that the observed differences in mean performance between the two groups were not sufficient to reach statistical significance. Consequently, the null hypothesis stating that there would be no significant difference in selected physical fitness variables between First-Year and Second-Year M.P.Ed. students was accepted. These findings suggest that both groups possess comparable levels of physical fitness, possibly due to similar training exposure and curricular structure.

V. DISCUSSION

The present study examined differences in selected physical fitness variables between First-Year and Second-Year M.P.Ed. students using an independent samples t-test. The results indicated that although Second-Year students exhibited higher mean values in most fitness variables, the differences were not statistically significant at the 0.05 level.

Based on the statistical findings, the null hypothesis stating that there would be no significant difference between First-Year and Second-Year M.P.Ed. students in selected physical fitness variables was accepted. This indicates that both groups possess comparable levels of physical fitness.

These findings are consistent with earlier studies by Fleck and Kraemer (2014), who suggested that similar training regimens across academic levels may result in comparable fitness outcomes. Kumar (2019) also reported that when training exposure is uniform, differences between academic levels may not reach statistical significance. Singh and Kaur (2018) emphasized that measurable differences are more pronounced when training volume and intensity differ substantially.

The observed trend of slightly higher mean scores among Second-Year students supports the theoretical expectation of cumulative training benefits (Baechle & Earle, 2008). However, factors such as limited sample size, similar curricular training loads, and individual physiological differences may have contributed to the non-significant results.

VI. CONCLUSION

The study concludes that academic progression in the M.P.Ed. program has a positive influence on selected physical fitness variables. Although statistically significant differences were not observed, Second-Year M.P.Ed. students demonstrated better mean performance in most physical fitness components compared to First-Year students. The findings suggest that systematic training and curriculum structure help in sustaining physical fitness levels throughout the program.

VII. RECOMMENDATIONS

1. Regular and periodic assessment of physical fitness variables should be conducted for M.P.Ed. students to monitor progress and training effectiveness.
2. Specialized training programs may be introduced to enhance specific components such as speed and flexibility.
3. Curriculum planners should consider progressive training loads across academic years to maximize physical fitness development.
4. Adequate facilities and recovery periods should be ensured to prevent overtraining and injuries.
5. Future studies may include larger samples and additional physiological variables for comprehensive analysis.

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