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IMPACT OF MORNING PHYSICAL ACTIVITIES ON SELECTED PHYSICAL AND PHYSIOLOGICAL VARIABLES AMONG ENGINEERING COLLEGE STUDENTS

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Abstract:
Objective: The current study aimed to examine the impact of morning physical activities on selected physical and physiological variables among engineering college students.
Methodology: To achieve the purpose of the study, thirty male engineering students from MEPCO Schlenk Engineering College, Sivakasi were selected and consider as subjects. The age of the subject ranged between 18 and 25 years. The selected students were randomly assigned into two groups: Morning Physical Activity Group (MPAG) (n=15) and Control Group (CG) (n=15). The study was restricted to selected dependent variables, including physical variables (agility and leg strength) and physiological variables (VO2 max and resting heart rate). The MPAG underwent morning physical activities and the CG did not undergo any training, except for their routine work. The respective training group was given 3 days of training per week for a period of 8 weeks. Data collected from the two groups before and after the training period were statistically examined for significant improvement using the dependent 't' test. The statistical test was set to be significant if p0.05 level of confidence.
Results: The results indicated that the physical and physiological variables, namely agility, leg strength, VO2 max, and heart rate, improved significantly due to the morning physical activities.
Conclusion: The morning physical activities were feasible and effective training programs to achieve an optimum level of selected physical variables (agility and leg strength) and physiological variables (VO2 max and heart rate) among engineering college students over a 8-week training period.
Key Words: Physical Activities, Agility, Leg Strength, VO2 Max, Resting Heart Rate and Engineering College Students.

Introduction:

Early physical activities will help you to start the day with more energy, focus, and optimism. Plus, after a morning workout, you're more likely eat healthy and say active throughout the day. Despite these benefits, there isn't a "right" time to exercise. The best time is one that you can stick with long-term (Kirsten., 2019). Engaging in morning physical activities offers numerous physical and physiological benefits for athletes. Physically, morning exercise boosts energy levels, increases endurance, and improves cardiovascular health, which are crucial for athletic performance. It helps maintain a healthy weight and build muscle strength, both essential for excelling in sports. Additionally, morning workouts promote better flexibility and reduce the risk of injuries by gradually warming up the muscles and joints. Physiologically, morning exercise enhances cognitive functions like alertness and focus, which are vital for strategic thinking and quick decision-making during competitions. It also regulates the body's circadian rhythms, leading to improved sleep patterns that aid in recovery and overall well-being. Morning workouts kick start the metabolism, leading to more efficient calorie burn throughout the day, which is beneficial for maintaining optimal body composition. Moreover, engaging in physical activity in the morning elevates mood, reduces stress, and enhances mental resilience, contributing to better emotional stability and performance under pressure. The endorphins released during exercise improve overall mental health, making athletes more positive and motivated. Overall, morning physical activities create a solid foundation for both physical and mental well-being, enhancing an athlete's performance and longevity in their sport.

Methodology:

To achieve the purpose of the study, thirty male engineering students from MEPCO Schlenk Engineering College, Sivakasi were selected and consider as subject. The age of the subject ranged between 18 and 25 years. The selected students were randomly assigned into two groups: Morning Physical Activity Group (MPAG) (n=15) and Control Group (CG) (n=15). The study was restricted to selected dependent variables, including physical variables (agility and leg strength) and physiological variables (VO2 max and resting heart

rate). The MPAG underwent morning physical activities and the CG did not undergo any training, except for their routine work. The respective training group was given 3 days of training per week for a period of 8 weeks. Data collected from the two groups before and after the training period were statistically examined for significant improvement using the dependent 't' test. The statistical test was set to be significant if p0.05 level of confidence.

Criterion Measures:

It is evaluate selected physical and physiological variables where chosen as the criterion measures to this study for testing.

Table 1: Criterion Measures

S.No	Criterion Variables	Test Items	Unit of Measurements
Physical Variables			
1	Agility	Illinois agility Test	In seconds
2	Leg strength	Standing Long Jump	In Meters
Physiological Variables			
3	VO2 Max	Cooper Vo2 Max run or walk test	In Meters
4	Resting Heart Rate	Pulse Oximeter	In Beats / Minutes

Table 2: The t - Ratio of Morning Physical Activity Group and Control Group on Agility Leg Strength Vo2 Max and Heart Rate

Variable	Groups	Pre Mean	Post Mean	SD	SEM	T
Agility	MPAG	19.11	18.20	1.53	0.08	5.42*
	CG	19.31	19.10	1.03	0.01	1.42
Leg Strength	MPAG	220.72	250.11	2.01	0.12	8.14*
	CG	223.11	223.09	1.92	0.05	1.32
Vo2 Max	MPAG	36.90	40.12	1.59	0.21	6.25*
	CG	34.22	35.50	1.42	0.30	0.96
Heart Rate	MPAG	70.23	65.12	0.92	0.15	10.35*
	CG	71.12	71.64	0.41	0.08	1.86

(Significance at 0.05 level of confidence for df of 14 is 2.14)

Mean standard deviation and t-value were calculated for each outcomes measure can be found in table 2. The result shows that the pre-test mean values of morning physical activity group(MPAG) and control group(CG) (19.11 & 19.31) (220.72 & 223.11), (36.90 & 34.22)and (70.23 & 71.12) respectively and the post-test mean values are(18.20 & 19.10) (250.11 & 223.09), (40.12 & 35.50)and (65.12 & 71.64) respectively. The obtained dependent t-test value on Agility (t=5.42), legs strength (t=8.14), VO2 max (t=6.25) and Heart rate (t= 10.35*) of morning physical activity group (MPAG). The table value required for significant difference with degrees of freedom 14 at 0.05 level of confidence. The obtained 't' test value of morning physical activity group was greater than the table value 2.14. The results clearly indicated that the agility, leg strength, VO2 Max and heart rate of the morning physical activity group (MPAG) improved due to the impact of morning physical activities.

Figure 1: Bar Diagram Shows the Mean Values of the Morning Physical Activity Group and Control Group on Agility and Leg Strength

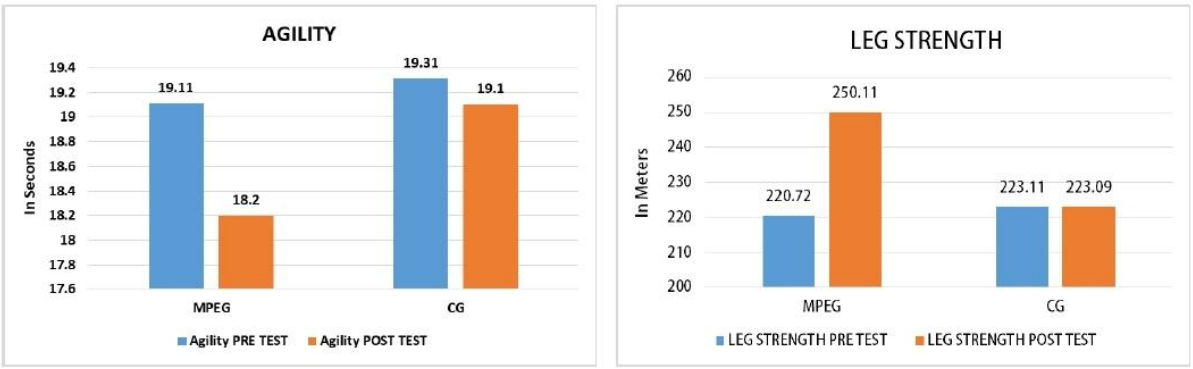
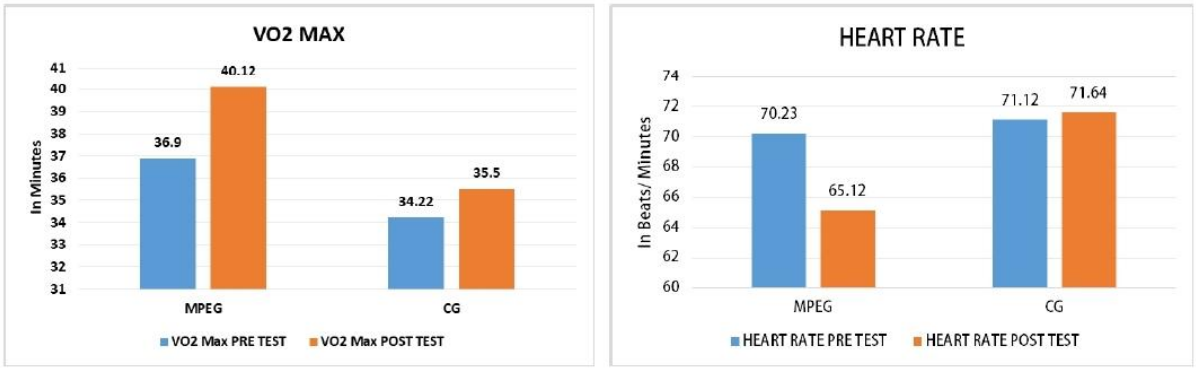


Figure 2: Bar Diagram Shows the Mean Values of the Morning Physical Activity Group and Control on Vo2 Max and Heart Rate



Discussion on Findings:

The study found that a 8-weeks of morning physical activities had a significant positive impact on the physical variables namely agility and leg strength and physiological variables namely VO2 max and heart rate. It is also found that the improvement caused by morning physical activities significantly improved the morning physical activity group (MPAG) when compared to the control group (CG). Thus, the results are in line with other study of which has Effects of morning vs. evening combined strength and endurance training on physical performance, muscle hypertrophy and serum hormone concentrations. The results of the study indicate that combined strength and endurance training in the evening session may lead to larger gains in muscle mass, while the endurance and strength training order might be more beneficial for endurance performance development (Kuusmaa,. 2016). Morning and Evening Effect of Exercise on Circadian Rhythm of Cardiac Hemodynamic and Autonomic Variables. The result of the study indicated that the exercise regardless of the performance time has a lowering effect on hemodynamic variables. Furthermore, morning exercise had more impact on decreasing the BP during sleep, while evening exercise had more impact on awake and 24hr BP (Aboozari. 2022).

Conclusions:

The 8-week program of morning physical activities demonstrated a significant positive impact on both physical variables (agility and leg strength) and physiological variables (VO2 max and heart rate). The results of the study indicates that Morning physical activates led to substantial improvements in these metrics for the Morning physical activity group (MPAG) when compared to the control group (CG). This suggests that incorporating structured physical activity, whether in the morning is highly effective in enhancing physical and physiological performance among engineering college students. The study highlights the importance of consistent exercise in improving key fitness parameters, which are crucial for overall health and athletic performance. By demonstrating the effectiveness of morning exercise regimens, the findings advocate for the inclusion of regular physical activity in daily routines to achieve optimal physical and physiological benefits. This research underscores the role of exercise in promoting health and fitness among engineering college students.

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