

A Comparative Study of Variables between Athletes and Non-Athletes at Kuvempu University

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Abstract:

The idea of physical fitness is dynamic and is becoming more and more significant in relation to daily living and health. Despite having a genetic foundation, this trait is also susceptible to variations in the kind and quantity of physical exercise, injury, and mortality. The following criteria measures were used for the study: resting pulse rate, systolic and diastolic blood pressure, explosive leg strength, speed, agility, and breath holding capacity. Athletes and non-athletes' means, standard deviations, and "T" values were computed. Athletes and non-athletes differed significantly ($p < 0.005$) in terms of explosive leg strength, speed, agility, resting pulse rate, and blood pressure (systolic), but there was no discernible difference between the two groups' breathing capacities and diastolic blood pressure. Thus, it can be said that the athletes' increased levels of physical and physiological fitness improve both their performance in sports and day-to-day activities.

Key words: physical fitness, Athletes, non-athletes, explosive leg strength, speed, agility, resting pulse rate, and blood pressure.

Introduction:

One of the most significant benchmarks and an essential component of education in any nation at any period is physical education and sports. Therefore, every nation should make an effort to lay out a framework of action plans for the advancement of sports and physical education. Ironically, while sports are being severely undervalued in the educational system, they are experiencing a phenomenal rise in media attention worldwide, including in India. Along with providing resources for the country and building an assessment system for educational advancements, the Physical Education Act also promotes the growth of physical education in a nation. One must overcome the obstacles and struggles to improve the infrastructure and structure in the area in order to develop the overall discipline in physical education and sports. At the moment, we can observe the decline of physical education in education when compared to earlier years.

Review of Literature:

Valliant, Simpson-Housley, and McKelvie (1981) continues to have an impact on drawing attention to the personality distinctions between athletes and non-athletes. According to the results of their study, athletes were more independent, less creative, and more domineering than their non-athletic counterparts. These results offered a starting point for comprehending how playing sports may foster qualities like goal orientation, leadership, and assertiveness that are less prominent in people who do not participate in organised sports. Recent studies have supported this line of inquiry by maintaining that participation in sports fosters the growth of emotional stability, self-control, and resilience.

Ivantchev and Stoyanova (2019) found that disciplined routines, team social support, and achieving personal goals were among the characteristics that contributed to athletes' increased

life satisfaction when compared to non-athletes. These findings are especially pertinent in the current environment, because non-athletes do not have access to the same structured type of self-actualization that sports offer, even while they have access to leisure activities. These studies emphasise the holistic nature of sports as more than just physical activity and imply that the social and emotional aspects of participating in sports are essential to life satisfaction.

Morrison and Schatz (2001), Athletes frequently do better than non-athletes on tasks demanding visual-motor coordination and fast decision-making, according to research on visual performance differences. This improvement is probably due to sports' constant need for quick information processing, opponent prediction, and split-second decision-making. The study adds to the increasing understanding that participating in sports improves cognitive and perceptual abilities in addition to physical strength. These findings highlight how sports can promote holistic development and give players cognitive advantages off the pitch.

Reel and Gill (2013), compiled research on female collegiate athletes and came to the conclusion that because players prioritise performance above beauty, they generally had a healthier body image than non-athletes. The research did highlight some complications, though, pointing out that athletes who participated in aesthetic-focused sports like gymnastics or figure skating frequently expressed body image issues that were on par with or worse than those of non-athletes. These results highlight the fact that, depending on the sport's competitive and cultural setting, participation in sports can either increase body dissatisfaction or act as a buffer against certain social pressures.

Smela, Hajovsky, Pacesova and Kracek(2017), found that both groups of athletes showed noticeably higher levels of motivation than non-athletes when compared to elite athletes, recreational athletes, and non-athletes. This demonstrates how participating in athletics fosters a feeling of purpose, achievement orientated, and competitive spirit that may not be as strong in non-athletes. The difference between elite and leisure athletes also highlights how intensity and dedication shape motivation, indicating a direct relationship between psychological drive and goal-setting skills and the level of athletic involvement.

Singhal et al. (2019), showed that engagement in athletics, particularly weight-bearing sports, affects bone density and skeletal health by comparing bone accretion patterns among oligo-amenorrhic athletes, eumenorrhic athletes, and non-athletes. It's interesting to note that women athletes' menstrual status further influenced results; eumenorrhic athletes had better bone development than their colleagues who weren't sports. These results demonstrate the complex relationship between sports and biological health and show that, although engaging in sports has obvious physiological advantages, long-term wellbeing requires appropriate health management.

Fruchard and Rulence-Paques (2019) examined mountain rambling in relation to non-athletes, mountain athletes, and non-mountain athletes. They discovered notable variations in how these groups felt arousal and satisfaction, with athletes—particularly those who had trained in mountainous settings—reporting higher levels of emotional engagement and fulfilment. This implies that via difficult tasks, athletes gain not just physical endurance but also psychological fortitude and a greater sense of intrinsic joy. Contrarily, non-athletes frequently view these tasks as more taxing and unsatisfying, highlighting the adaptive psychological advantages of athletics.

Aydogdu, Erol, Ayvat and Sari(2025), investigated the psychological consequences of the pandemic and discovered that while athletes were more motivated and committed to their sport, they were also more susceptible to stress and COVID-19 dread. Despite being less

physically active, non-athletes frequently reported less stress related to their involvement in sports.

Knowles, Shannon, Prentice, and Breslin (2021), Athletic and non-athletic mental health outcomes during pandemic lockdowns were compared. Athletes with a strong sense of athletic identity reported higher levels of anxiety, particularly when they were unable to play sports, even when resilience levels were generally equivalent. These results demonstrate that although athletes typically benefit psychologically, their strong ties to sports can also work against them by increasing their vulnerability in circumstances when involvement is restricted.

Objective:

To explore the physical and physiological fitness between athletes and Non-athletes with the different variables.

Hypothesis

There is no significant difference between breathing capacity and Diastolic Blood pressure of Athletes and Non-Athletes

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Methodology:

The Simple Random Sampling Technique was used after all factors were carefully considered, and the sample size was set at 200 college men enrolled at Kuvempu University. College males between the ages of 21 and 25 were chosen at random. There were 100 athletes and 100 non-athletes in the entire sample. During the test, data was gathered using the following tools. Measurement tape, marking powder, wooden blocks, a sphygmomanometer, a pencil, a stopwatch, a 400-meter or at least 200-meter track, a clipper, a mat or long jump pit, and a stethoscope. The variables, equipment's and scoring are enlisted in the below table:

Sl.No	Variables	Equipment's	Scoring
1.	Explosive leg strength	Long jump pit, Measuring tape	Distance
2.	Speed	Minimum 200m track	Distance
3.	Agility	Marking powder and wooden blocks	Time
4.	Blood pressure	Sphygmonmano meter	Percentage
5.	Resting Pulse rate	Stethoscope	Percentage
6.	Breath holding capacity	Nil	Time

Analysis:

Table No.1:-Mean Standard deviation and "T" value of Athletes and Non-Athletes for the variables 60 yard dash.

Sl.No	Group	No.of students	Mean	S.D	SD error	't' value
01.	Athlete	50	7.6946	.77638	.10980	-7.265*
02.	Non-Athlete	50	8.7076	.60772	.08595	

There is a substantial difference between athletes and non-athletes, according to the independent sample t-test result. Compared to athletes (M = 7.69, SD = 0.78), non-athletes have a higher mean score (M = 8.71, SD = 0.61). At the selected confidence level, the t-value of -7.265 is statistically significant (p < 0.05). It seems improbable that the observed difference between the two groups is the result of chance, according to this.

Table No.2:- Mean Standard deviation and 'T' value of Athletes and Non-Athletes for the variables Standing Broad Jump.

Sl.No	Group	No.of students	Mean	S.D	SD error	't' value
01.	Athlete	50	7.8480	.82391	.11652	
02.	Non-Athlete	50	7.0690	.85419	.12080	

According to the data, athletes and non-athletes perform significantly differently on the Standing Broad Jump test. Athletes have a higher mean score (M = 7.85, SD = 0.82) than non-athletes (M = 7.07, SD = 0.85). This suggests that athletes can perform noticeably better in terms of horizontal jumping ability and explosive leg strength on average.

Table No.3:- Mean Standard deviation and 'T' value of Athletes and Non-Athletes for the variables Shuttle run

S.No	Group	No.of students	Mean	S.D	SD error	't' value
01.	Athlete	50	7.8272	.35890	.05076	-8.363*
02.	Non-Athlete	50	8.5636	.50882	.07196	

The t-value of -8.363, which is significant at the 0.05 level, indicates that there is a statistically significant difference between athletes and non-athletes in the Shuttle Run test results. Athletes have a much lower mean performance time (M = 7.83, SD = 0.36) than non-athletes (M = 8.56, SD = 0.51). This result unequivocally shows that athletes perform better than non-athletes in terms of speed, agility, and rapid direction changes because a lower time in shuttle runs corresponds to greater performance.

Table No.4:- Mean Standard deviation and 'T' value of Athletes and Non-Athletes for the variables Pulse rate

Sl.No	Group	No.of students	Mean	S.D	SD error	't' value
01.	Athlete	50	59.6000	3.44046	.4865	-5.196
02.	Non-Athlete	50	63.2000	3.48759	.49322	

A statistically significant difference in pulse rate between athletes and non-athletes is indicated by the t-value of -5.196. Compared to non-athletes (M = 63.20, SD = 3.49), athletes have a considerably lower mean resting pulse rate (M = 59.60, SD = 3.44). This difference is important

because a lower resting pulse rate is believed to be a predictor of stronger heart function, increased aerobic fitness, and improved cardiovascular efficiency.

Table No.5:- Mean Standard deviation and ‘T’ value of Athletes and Non-Athletes for the variables Breath Holding capacity.

Sl.No	Group	No.of students	Mean	S.D	SD error	‘t’ value
01.	Athlete	50	33.6688	6.28336	.88860	1.184
02.	Non-Athlete	50	32.1812	6.27700	.88770	

According to the Breath Holding Capacity test results, athletes had a somewhat higher mean score (M = 33.67, SD = 6.28) than non-athletes (M = 32.18, SD = 6.28). At the traditional 0.05 level, the derived t-value of 1.184 is not statistically significant. This indicates that although athletes seem to be slightly better at holding their breath than non-athletes, the difference is negligible and may be due to chance rather than a real result of sports training.

Table No.6:- Mean Standard deviation and ‘T’ value of Athletes and Non-Athletes for the variables Blood pressure (Systolic).

Sl.No	Group	No.of students	Mean	S.D	SD error	‘t’ value
01.	Athlete	50	123.000	10.35098	1.46385	-4.493
02.	Non-Athlete	50	134.800	15.41799	2.18043	

A t-value of -4.493 indicates a statistically significant difference in systolic blood pressure between athletes and non-athletes. Athletes have a considerably lower mean systolic blood pressure (M = 123.00, SD = 10.35) than non-athletes (M = 134.80, SD = 15.42). This suggests that compared to non-athletes, athletes had superior cardiovascular health and higher circulatory efficiency.

Table No. 7:- Mean Standard deviation and ‘T’ value of Athletes and Non-Athletes for the variables Blood pressure (Diastolic).

Sl.No	Group	No.of students	Mean	S.D	SD error	‘t’ value
01.	Athlete	50	83.8000	10.07928	1.42543	-1.726
02.	Non-Athlete	50	88.2000	14.94070	2.11293	

Athletes had a lower mean diastolic blood pressure reading (M = 83.80, SD = 10.08) than non-athletes (M = 88.20, SD = 14.94), according to the comparison of the two groups. At the 0.05 level, however, the derived t-value of -1.726 is not statistically significant. This suggests that although there is a discernible difference between the two groups, it is not significant enough to draw the firm conclusion that it results from athletic training as opposed to chance.

Conclusion:

The statistical analysis showed that there is no significant difference between Kuvempu University athletes and non-athletes in the parameters of breath holding and diastolic blood pressure, but there is a significant difference between the athletes and non-athletes in the parameters of the 60-yard dash, standing broad jump, shuttle run, pulse rate, and systolic blood

pressure at the 0.05 level of significance. As compared to non-athletes, athletes used to place greater emphasis on their physiological parameters and level of physical fitness, which is why the results above were obtained. They are better equipped to handle any everyday activity or physical activity thanks to their regular training.

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