

A Comparative Study on Weight of Players in Team Sports and Individual Sports.

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Abstract:

According to Table II, the *t*-value for Team Game is 31.600 and for Individual is 44.254. The *t*-value for Individual is higher than for Team Game. The mean difference for Team Game is 69.53, and for Individual is 87.83. The mean difference for Individual is higher than for Team Game. Therefore, the Weight of Individual is higher than that of Team Game. This study was conducted to compare the Weight of Team Game and Individual. The independent variable is Weight, and the dependent variables are Team Game and Individual. A total of 15 Team Game and 15 Individual were sampled. Therefore, a total of 30 players were examined. The study concluded that players at Individual have better Weight. Consequently, players at Team Game also have better Weight. The reason for Individual Game good Weight is their balanced diet and socialization. This study aimed to educate Team Game and Individual about Weight.

Key word: Weight, Team Game and Individual Game.

INTRODUCTION

In sports science, kinesiology, and competitive athletics, an athlete's body weight represents far more than a single numerical reading on a bathroom scale. It is a dynamic physiological variable encompassing structural mass, metabolic machinery, biochemical fuel reserves, and mechanical leverage. The total gravitational mass of a sportsman directly influences every jump, sprint, collision, turn, and recovery cycle. Understanding weight in sports requires moving beyond simplistic height-weight charts and looking deeply into body composition,

bioenergetics, mechanical physics, and sport-specific physiological adaptations. Total body weight in an athlete is the cumulative sum of all biological tissues, fluids, and mineral matrices that make up the human body. Unlike non-athletic populations, whose weight is largely composed of standard reference proportions of fat and muscle, an athlete's body mass is heavily adapted to the physical stressors of their specific discipline. Athletic weight is conventionally divided into two primary structural compartments: Fat Mass often referred to interchangeably with Lean Body Mass (LBM). Fat-Free Mass constitutes the functional engine of the athletic body. It includes skeletal muscle tissue, which contains the contractile protein filaments (actin and myosin) that generate force, speed, and mechanical power. Bone mineral density represents another critical component of lean mass. High-impact and resistance-trained athletes display significantly higher skeletal mineral density than sedentary individuals, allowing their frames to withstand heavy external loads and dynamic ground reaction forces without structural failure. Body water accounts for approximately 60% to 70% of total lean mass and forms the biological matrix for cellular metabolism, thermal regulation, waste clearance, and cardiovascular stroke volume. Intracellular water is stored alongside muscle glycogen in a ratio of approximately three grams of water to every gram of stored carbohydrate, making fluid dynamics an essential component of total scale weight. Connective tissues, including dense regular collagenous tendons, ligaments, joint capsules, and deep fascial networks, contribute both mass and elastic strain energy storage, directly assisting in force transmission during explosive movement patterns. Visceral organs—such as the heart, liver, lungs, kidneys, and brain—account for a small percentage of total mass but demand a disproportionate share of resting metabolic energy. In highly trained endurance athletes, the heart muscle undergoes physiological hypertrophy (athlete's heart), slightly altering internal mass while massively boosting functional cardiac output. Fat Mass, the second major compartment, consists of essential fat and non-essential storage adipose tissue. Essential fat is biologically mandatory for survival, normal endocrine secretion, neural myelination, and internal organ cushioning; it represents roughly 3% to 5% of body weight in male athletes and 12% to 14% in female athletes. Storage fat serves primarily as an aerobic energy reservoir. However, when accumulated beyond sport-specific requirements, excess adipose tissue acts as passive biological dead weight, increasing the metabolic cost of movement and decreasing the athlete's mechanical power-to-weight ratio. **Physics and Biomechanics of Weight in Movement.** Newtonian physics governs every athletic contest, and body mass is the central variable in almost every mechanical equation that dictates sports performance. According to Newton's Second Law of Motion the force required to accelerate a body is directly proportional to its mass. A heavier athlete requires substantially greater muscle force production to achieve the same rate of acceleration as a lighter athlete, which explains why sprinting and rapid change-of-direction sports favor minimal superfluous body fat. In horizontal running, kinetic energy must be generated and dissipated with every stride. Excess non-contractile mass elevates the vertical impact forces absorbed by the lower extremities, accelerating joint wear and increasing the risk of stress fractures and patellofemoral pain. In vertical jumping, pole vaulting, and high jumping, the work done to elevate the body against gravity is governed by gravitational potential energy. A higher lean-power-to-total-mass ratio allows

the athlete to maximize flight height by generating high take-off velocities. In collision and contact sports like rugby, American football, and kabaddi, linear momentum becomes a dominant physical determinant. A heavy, fast-moving athlete possesses high momentum, making them harder to stop during a tackle and capable of delivering significant kinetic impact to breach defensive lines. Inertia, the resistance of an object to changes in its state of motion, scales directly with mass. While high inertia provides stability against being pushed or displaced in wrestling or offensive line play, it also introduces mechanical penalties when rapidly decelerating or changing directions on the court or pitch. Rotational biomechanics also depend heavily on body weight and mass distribution. The moment of inertia dictates the torque required to spin, flip, or twist; figure skaters and gymnasts deliberately maintain compact, lean frames to keep their radius of gyration small, allowing rapid angular acceleration in mid-air. Body weight is the principal driver of an athlete's Basal Metabolic Rate (BMR) and total daily energy expenditure (TDEE). Contractile muscle tissue is metabolically active even at rest, burning continuous calories to maintain ion gradients, synthesize proteins, and support resting cellular turnover.

During weight-bearing activities such as running, hiking, and soccer, energy expenditure increases almost linearly with total body weight. Carrying an extra two kilograms of non-functional fat mass increases the oxygen uptake required to run at any given submaximal pace, directly degrading running economy. Maximal oxygen uptake is standardly expressed relative to body mass in millilitres of oxygen consumed per kilogram of body weight per minute. Even without any change in absolute cardiovascular pumping capacity, an increase in superfluous weight automatically lowers this relative endurance score.

Conversely, in non-weight-supported activities such as swimming or rowing, the biomechanical penalty of body mass is mitigated or altered. In rowing, absolute power output and stroke length often outweigh the drag penalty of extra mass, favoring tall, heavy, and exceptionally muscular competitors. In long-distance swimming, a modest layer of subcutaneous adipose tissue offers specific physical advantages by providing natural buoyancy in the water, which improves horizontal hydrodynamics and reduces the energy cost of staying afloat. Subcutaneous fat also provides thermal insulation, which protects open-water swimmers from hypothermia during prolonged exposure to cold marine environments, whereas terrestrial endurance runners require rapid heat dissipation through convective sweat evaporation.

OBJECTIVES OF THE STUDY

1. To determine whether players are aware of weight-related information.
2. To study the role of weight in the players' health.
3. To assess and highlight the weight status of the players in the context of their health.

HYPOTHESIS

1. There will be a significant difference in the weight and health of players involved in team games and individual games.
2. There will be no difference in the weight and health of players involved in team games and individual games.

DELIMITATIONS

1. This study will be limited to male athletes, including those from both team and individual sports.
2. This study will be limited to 30 male athletes from team and individual sports.
3. Only athletes from the Meerut Division will be included in this study.

LIMITATIONS

If a person switches from their normal diet to an unhealthy one before a weight check, the results could be inaccurate.

REVIEW OF RELATED LITERATURE

Goyal & Sharma, 2018 compared the mental toughness and sports achievement motivation of 25 individual and 25 team game players from the Lakshmibai National Institute of Physical Education, Gwalior, with an age range of 20-25 years. S.A.M.T. questionnaire developed by Kamlesh (1990) and the mental toughness questionnaire developed by Dr. Allan Goldberg (2004) were employed in this study to assess the sports achievement motivation and mental toughness of the players. The analysis of the data was conducted using the Mean Value, Standard Deviation, and Independent 'T' test. The findings of the study indicated that the average sports achievement motivation score was significantly higher among Individual games players compared to Team game players, and that there was a considerable difference in the average mental toughness between Individual game players and Team game players.

Jadhav, 2019 compared the level of sport achievement motivation between west zone inter university basketball male players, for the purpose of the study 40 players were randomly selected from Maharashtra state and 40 from Gujarat state Universities. Dr. M.L. Kamlesh, Sports Achievement Motivation Test (SMAT) was used to measure the motivation level of players. For statistical analysis Independent 't' test was used. The result indicated that the male players participated in the West Zone Inter University Basketball Tournament of the Maharashtra University and Gujrat University had a significant difference in terms of motivation to achieve sports success with a confidence level of 0.01.

Jalil Moradi, 2020 examined the motivations of athletes participating in team and individual sports. The study included 265 athletes from four sports, selected at random, as well as two separate disciplines. The athletes were then asked to fill out a PMQ containing 30 items. The results of this study were then analyzed using an independent t-test to determine the motivation of the athletes participating in the study. It was found that there was an apparent difference in motivation among men and women when it came to team and individual sport, with the latter being more motivated to participate in team sports. However, the PMQ only included the components of achieving success and finding friendship, with no other major differences being observed. This study demonstrates the importance of the sports discipline of the athlete and gender in motivating them to continue and maintain their physical activity.

Malik, 2022 compared the level of sports achievement motivation among female kabaddi players participated at inter-university and state level championships. A random sample of 250 Kabaddi Players was selected based on the random sampling methodology. The Sports Achievement Test

(S.A.T). developed by Kamlesh, was used to compile the data. The S.D and 't' tests were then used to analyze the data. The findings indicated that 50 Kabaddi Players participated in Inter-University and State Level Championships differ significantly in terms of their motivation to achieve sports success. Consequently, it can be concluded that Kabaddi players who participated in State Level Championships have a higher level of sports success motivation than those participated in Inter-University level Championships.

Mankar, 2019 examined the motivation level of individual and team game players to excel in sports. The study included a sample of 100 individuals and 100 team players who had taken part in inter-collegiate Tournaments of of the R.T. M. Nagpur University at Nagpur. The standardised achievement motivation scale of Dr. Mukharji was used to measure the motivation of the individual and team players. The results of the study indicated that the Individual games players had a greater motivation to excel than the team games players, as the Individual games players were required to have an intrinsic motivation to excel, while the team games players had a collective motivation to succeed. This type of research is beneficial for Physical Educators and Coaches to enhance performance through the use of achievement motivation.

METHODOLOGY

This study part describes the procedures followed for selecting subjects, selecting variables, criteria measures, collecting data, and the statistical techniques used.

SELECTION OF SUBJECTS

The study selected 30 players, including 15 Team Game and 15 Individual, to measure Weight. Male players were selected for this study.

Independent Variable:

Weight

Dependent Variables:

Team Game

Individual Game

SELECTION OF SAMPLING TECHNIQUE

A simple random sampling technique was used to collect reliable data from the respondents. Player was sampled according to a random number table.

CRITERION MEASURES OF VARIABLES

TOOL

Weight	Weighing machine
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STATISTICAL ANALYSIS OF DATA

For this study, the mean and standard deviation were examined. An independent t-test ('t' test) was also used to determine the significance of differences between the selected players. SPSS software was used to determine the mean differences between Team Game and Individual. To determine significance, the level of significance was set at 0.05.

Table: 1

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Team Game	15	69.53	7.11	2.01
Individual Game	15	87.83	6.08	1.02

Table : I showed that Team Game Mean and Std. Deviation is 69.53 ± 7.11 and Std. Error Mean is 2.01

Individual Game_Mean and Std. Deviation is 87.83 ± 6.08 and Std Error Mean is 1.02

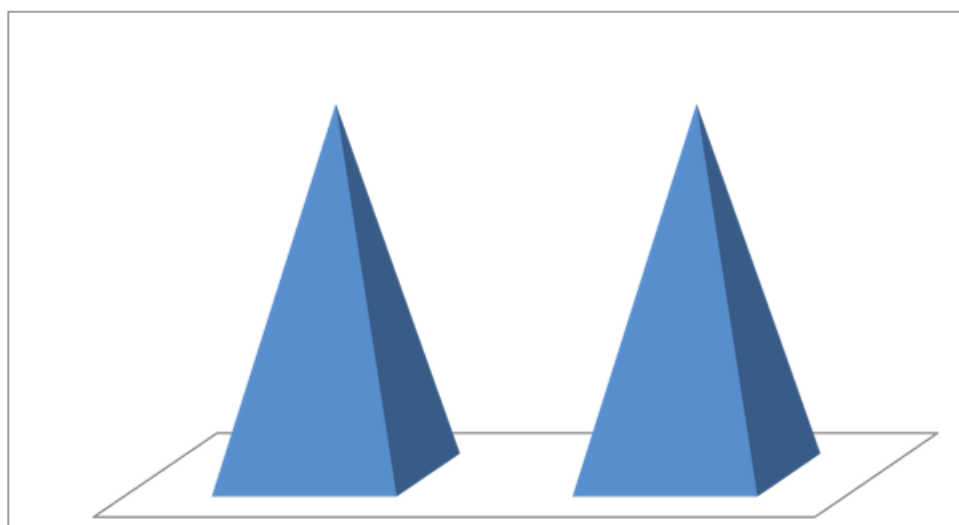
One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Team Game	31.600	14	.000	69.53	54.03	67.04
Individual Game	44.254	14	.000	87.83	76.30	89.31

***Significant at 0.05 level of significant $t(14)(0.05)=2.145$**

Table: II results show that the Team GameWeight received't'-value is 31.600 and this value is significantly higher than the tabulated 't' value 2.145 at 0.05 level of significance

Individual Weight received't'-value is 44.254 and this value is significantly higher than the tabulated't' value 2.145 at 0.05 level of significance.



Result:

According to table II Team Game's' value is 31.600 and Individual is 44.254. The 't' value of Individual is greater than Team Game. Mean difference of Team Game 69.53 and mean difference of Individual

is 87.83. The mean difference of Individual is higher than Team Game. That's why the Weight of **Individual is more than that of Team Game.**

Conclusion

This study was done to compare the Weight of Team Game and Individual. Independent variable is Weight and dependent variables are Team Game and Individual. Total 15 Players of Team Game and 15 Players of Individual were taken. Hence total 30 Players were examined. The conclusion of the study is that the Players of Individual are good at Weight. Hence Players of Team Game. The reason behind the good Weight of Individual is their balance diet and socialization. The motive of the study is to provide awareness about Weight to Team Game and Individual.

Reference:

Goyal & Sharma, 2018) compared the mental toughness and sports achievement motivation of 25 individual and 25 team game players from the Lakshmibai National Institute of Physical Education, Gwalior, with an age range of 20-25 years.

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