

Descriptive Study Of Hand Grip Strength Of Undergraduate Students In Kuvempu University

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KEYWORDS

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ABSTRACT

The purpose of the study was to describe the level of Hand grip strength among men and women of undergraduate students who are not regularly involved in physical exercises. Out of 454 students, 256 were females, and 198 were males. The age of the students was between 19-23 years (21.01 ± 0.71). A minimum sample size of 454 was achieved through the use of an innovative research survey system. Dynamometer was used to assess the hand grip strength. Standard descriptive statistics were obtained. Uncorrelated t-test was used to identify the difference between males and females. The results of this test indicated that there was a significant difference observed between the males and females.

1. Introduction

Hand grip strength is referred to as the force that the hand applies to hold, pull, or suspend objects in the hand. It is a trustworthy measurement that is simple to use to assess the hand's functional integrity [1]. Numerous factors, including age, gender, BMI, hand and forearm anthropometries, and hand dominance, have affected hand grip strength values. Skeletal muscle strength is influenced by a variety of factors, including hormones, physical activity, body composition, and build [2]. Total muscle strength and physical fitness are reflected in hand grip strength. As such, it can serve as a potent gauge of the body's general strength [3]. When compared to physically active individuals who regularly participate in sports like basketball, handball, tennis, hockey, cricket, and more, sedentary individuals who do not play sports have shown noticeably reduced hand grip strength [4]. As a result, hand grip strength can be used to predict a population's likelihood of developing non-communicable diseases like myocardial infarction and stroke as well as to show how sedentary they are [5]. To gain a better understanding, it's also critical to take into account the other elements that affect hand grip strength [6].

Particularly among students, hand grip strength has grown in popularity as a metric for evaluating physical health and fitness. It is described as the force produced when a hand is squeezed [7]. Hand grip strength can be used clinically as a stand-in for general health profile since it reflects strength, muscle mass, and protein levels. A straightforward, affordable, and trustworthy instrument for measuring hand grip strength is a hand-held dynamometer [11]. In an effort to determine normative reference values in various parts of the country, the evaluation of hand grip strength has recently been expanded to younger populations, including children [12,13]. To the best of our knowledge, there hasn't been any research of this type among young adults at Kuvempu University, despite the fact that numerous studies have been carried out at various universities to comprehend hand grip strength and the relationship of various variables. Thus, the purpose of the study is to characterise the hand grip strength and the factors that influence it in undergraduate male and female students who do not regularly engage in physical activity.

2. Methodology

The purpose of the study was to describe the level of Hand grip strength among men and women of undergraduate students who are not regularly involved in physical exercises. Out of 454 students, 256 were females, and 198 were males. The age of the students was between 19-23 years (21.01 ± 0.71). A minimum sample size of 454 was achieved through the use of an innovative research survey system [8]. A straightforward randomised sampling technique was used to choose male and female first-year undergraduate students who met the inclusion requirements. For randomisation, a random number generator was employed. The nature of

the study was explained to the included subjects in the language that they could understand the best. Subjects who were willing to participate in the study provided written informed consent, which each subject duly signed [9]. Only the research team had access to the consent form and all other participant identifiers, which were kept private and secure. Dynamometer was used to assess the hand grip strength. Standard descriptive statistics were obtained. Uncorrelated t-test was used to identify the difference between males and females [10].

3. Results

Table 1. Descriptive Analysis Hand Grip Strength

Parameter	Male (n=256)	Female (n=198)	P value
	Mean ± SD	Mean ± SD	
Dominant	38	21	<0.005*
Non Dominant	35	19	<0.005*

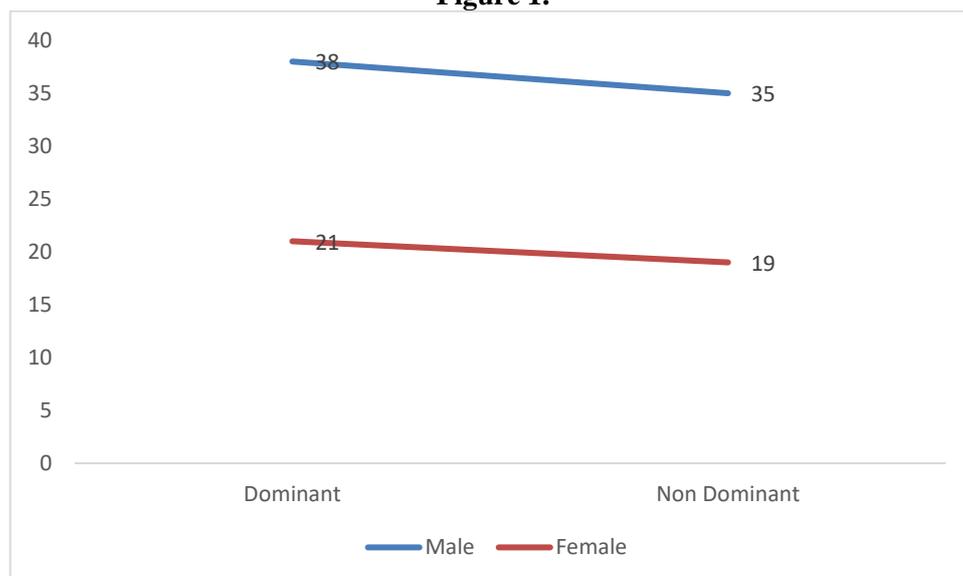
This illustrates that there is a significant difference ($p < 0.005$) in mean values of dominant and non-dominant hand grip strength between males and females.

Table 2. Computation of Independent ‘t’ ratio between Males and Females on Hand Grip Strength

	Levene’s Test for Equality of Variances		T test for Equality of Means				
	F	Sig	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal Variance Assumed	3.68*	0.05	2.18	453	0.05	0.02	0.10
Equal Variance Not Assumed			2.18	438.27	0.05	0.02	0.10

In order to examine differences in Dominant Hand Grip Strength between the males and females, an independent samples *t*-test was conducted. Given a violation of Levene’s test for homogeneity of variances, $t(1,453)=1.96$, $p = .05$, a *t*-test not assuming homogeneous variances was calculated. The results of this test indicated that there was a significant difference observed between the males and females and the obtained ‘t’ ratio was 2.18.

Figure 1.



4. Discussions on Findings

The hand grip strength of a group of academically orientated undergraduate students at Kuvempu University who do not regularly engage in physical training is described in this study. Additionally, as other researchers have also reported, our study also showed a significant gender influence on hand grip strength. Male and female hand grip strength measurements were made, and the dominant and non-dominant hands of the current study

population displayed values that were below those found in numerous other studies [1,13,14]. These variations might point to the contribution of various environmental and genetic elements linked to these varied populations. A number of variables, including ethnic differences in body anthropometry, geographic location, cultural status, lifestyle choices, including dietary habits and physical activity patterns, can be significant. The lifestyle of academically orientated people is typically one of minimal physical activity. Therefore, a person's hand grip strength can be used to gauge their level of physical activity.

5. Conclusion and Future Scope

In an academically orientated group, this study has shed light on the relationship between low hand grip strength and decreased physical activity that leans towards a sedentary lifestyle. Furthermore, it has been demonstrated that, among other internal factors, male gender and hand dominance are responsible for higher hand grip strength. Since there is a lack of information on hand grip strength, similar studies should be conducted for the entire country's young adult population. Studying hand grip strength for different ethnic groups will also be interesting.

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