JOURNAL OF ACADEMIC RESEARCH FOR HUMANITIES
ISSN 2663-192x

HJRS Link: Journal of Academic Research for Humanities (HEC-Recognized for 2023-2024)
Edition Link: Journal of Academic Research for Humanities, 3(3) July-September 2023

Link of the Paper: https://jar.bwo.org.pk/index.php/jarh/article/view/330

THE EFFECT OF WARM-UP ON PERFORMANCE AND INJURY RISK IN A TUG-OF-WAR ATHLETES

Corresponding Author 1:	**MUHAMMAD ZAHID MAHMUD**, Lecturer Physical Education and Sports The Islamia University of Bahawalpur Email: Zahid.mahood@iub.edu.pk
Co-Author 2:	**MUHAMMAD SHAHBAZ**, Visiting Lecturer University of Layyah, Email: shahbazokharwand@gmail.com
Co-Author 3:	**MUHAMMAD ASHRAF**, Lecturer Physical Education and Sports Govt. Graduate College Hasilpur, District Bahawalpur, Email: ashrafathraaa@gmail.com

Paper Information

Citation of the paper:
(APA) Mahmud, Muhammad, Z. Shahbaz, Muhammad. and Ashraf, Muhammad (2023). The Effect of Warm-Up on Performance and Injury Risk in a Tug-Of-War Athletes. In Journal of Academic Research for Humanities, 3(3), 330–340A.

Subject Areas:
1 Humanities
2 Physical Education

Timeline of the Paper:
Received on: 30-08-2023.
Reviews Completed on: 30-09-2023.
Accepted on: 30-09-2023.
Online on: 30-09-2023.

Recognized:

HJRS HEC Journal Recognition System

Published by:

BWO RESEARCHES (PVT) LTD PAKISTAN

Abstract

This research aims to investigate the effect of warm-up on performance and injury risk in Tug-of-war athletes. This study was carried out using a quantitative approach. A descriptive method of research was used for the study. The population of this study consisted of 100 Tug-of-war Athletes from The Islamia University of Bahawalpur. A simple random sampling technique was used to collect the data. The sample size was 50 athletes from the Islamia University of Bahawalpur. The questionnaire was distributed to Tug-of-war Athletes at The Islamia University of Bahawalpur. After collecting data, the researcher analyzed the data through SPSS. From the score of the rating scale, the percentage was determined, and Graph representation was also given with the percentage analysis. After analyzing the data, several key findings emerged regarding the participants' perceptions and experiences with warm-up exercises in Tug of War. A significant proportion of participants expressed the importance of warm-up exercises in preparing them physically and mentally for the competition. Moreover, respondents acknowledged the role of warm-up exercises in reducing the risk of related injuries. Findings from the data analysis indicate that warm-up exercises play a crucial role in physical and mental preparation, and injury prevention, in the context of Tug of War. Emphasize the importance of warm-up exercises. Coaches and practitioners should educate athletes about the significance of warm-up routines in enhancing physical fitness, and injury prevention. The researcher recommended that institutions should develop comprehensive warm-up protocols.

Keywords: Performance, Injury, Risk, Athletes, Mentally.

Introduction

Tug-of-war sports require both training and techniques of strength and endurance. (Siedentop, 2022) . Tug-of-war athletes need to be in optimal physical shape to excel in their performance. (Häkkinen, 2021). During competitions, athletes might get hurt because of how physically demanding the sport is. (Siedentop, 2022). The warmup activities have become a compulsory part of training for tug-of-war athletes (Häkkinen, 2021). Despite the physical necessity of sports, some investigated studies have been on the effect of warm-up on performance and injury risk in tug-of-war athletes (Häkkinen, 2021). Lack of research makes it difficult for trainers and coaches to design effective warm-up activity plans to meet the specific needs of tug-of-war athletes. Therefore, the researcher aims to investigate the effect of warm-up on performance and injury risk in tug-of-war athletes. This study provides the importance of warm-up activities for sports performance, injury prevention, and rehabilitation of tug-of-war athletes especially. Also suggested the best effective warm-up exercises for tug-of-war athletes and evaluated the exercises' effects on performance and injury risk, this study shell out awareness of the body and benefits of tug-of-war athletes, coaches, and trainers in planning for most effective warm-up activities.

Warm-up

Warm-up techniques can be broadly classified into two major categories: (i) passive warm-up; or (ii) active warm-up. Passive warm-up involves raising muscle temperature or core temperature by some external means (e.g. hot showers or baths, saunas, diathermy, and heating pads). Active warm-up involves exercise and is likely to induce greater metabolic and cardiovascular changes than passive warm-up. Active warm-up is probably the most widely used warm-up technique. (Bishop D. , 2003)

Types of warm-ups

Warm-up can be passive and active. Active warm-up can be classified into general warm-up and specific warm-up. In passive warm-up muscle temperature can be increased by external means i.e., heat showers and heating pads. Active warm-up involves physical activities. In general, a warm simple exercise of the body but in specific warm-up involves specific exercises of specific sports.

Exercises of warm-up

Different exercises can be used for warm-up. The most common exercises used for warm-up as stretching i.e., static stretching and dynamic stretching. Static stretching involves various exercises in a standing position. Dynamic stretching involves the activities in moving position.

Injury

Injury refers to physical harm or damage to the body's tissues, organs, or systems that typically result from accidents, trauma, overuse, or other adverse events. In a medical context, injuries encompass a wide range of conditions, from minor cuts and bruises to more severe damage such as fractures, sprains, strains, and internal injuries (Blume, 2012).

Effect of warm-up on injury

(Fradkin A. J., 2006) Warm-up has shown a positive effect on reducing muscle injuries. This study focuses on the effect of warm-up on performance. Athletes were assigned to the intervention and control groups. The studies that found that warming up before physical activity reduced the risk of injury investigated tug-of-war and American football. One study tug-of-war found that by warming up, the number of both traumatic and overuse injuries in the intervention group was significantly lower than that in the control group.

Background of Study

Tug-of-war has been played for decades and is examined as the oldest sport in the world.(Rajest, 2022). Sports demand the involvement of different muscles, groups of

muscles for the upper and lower body, and core temperature of the body. Without proper warm-up, it can lead to significant tension on the musculoskeletal system and cause injuries such as strain and sprain.(Rajest, 2022). Therefore, to enhance performance and reduce the risk of injury the warp-up exercises are compulsory for tug-of-war athletes.Warm-up activities can be different in duration, intensity, and selection of specific warm-up exercises. According to (Fradkin, 2021) the warm-up of at least 10-15 minutes can enhance the performance. However, the duration and intensity of warm-up activities may be different depending on the sport and individual differences of athletes. (Wood, 2019). The warm-up exercises are essential for tug-of-war athletes to enhance performance and reduce the risk of injury. Investigating the effect of warm-up on performance and injury risk in tug-of-war athletes is very important to design an effective warm-up exercise to meet the special needs of sports.

Statement of the Problem

Despite the physical necessity of sports some of the investigated studies have been on the effect of warm-up on performance and injury risk in tug-of-war athletes. Lack of research makes it difficult for trainers and coaches to design effective warm-up activity plans to meet the specific needs of tug-of-war athletes.

Research Objectives

1. To investigate the effect of warm-up on performance and injury risk in tug-of-war athletes.
2. To identify the most effective warm-up exercises for tug-of-war athletes.
3. To determine the effect of warm-up on performance in tug-of-war athletes.
4. To evaluate the effect of warm-up on injury risk in tug-of-war athletes.

Research Questions

1. What are the most effective warm-up exercises for tug-of-war athletes?
2. How does warm-up affect the performance of tug-of-war athletes?
3. What is the effect of warm-up on injury risk in tug-of-war athletes?

Research Methodology

This study was carried out using a quantitative approach. A descriptive method of research was used for the study. The population of this study consisted of 100 Tug-of-war Athletes from The Islamia University of Bahawalpur. A simple random sampling technique was used to collect the data. The sample size was 50 athletes from the Islamia University of Bahawalpur. The questionnaire was distributed to Tug-of-war Athletes at The Islamia University of Bahawalpur.

Literature Review

Stretching exercises should be considered for the practice of tug-of-war competition and made physically and psychologically ready for upcoming sports events. The warm-up should consist of general and specific exercises to boost the core body temperature. Various stretching exercises can be included in warm for strength, endurance, flexibility, and range of motion for specific movements of sports and to start up the muscles used in a tug of war. The warm-up should be at least 5 to 10 minutes and must be done before the competition or training program. These warm-up activities may be different for different sports. The warm-up exercises lead to reducing the risk of injuries for tug-of-war athletes. Athletes' performance in tug-of-war and risk of injury has both been widely researched concerning warm-up activities. Overall, it has been shown that warm-up activities improve tug-of-war performance, with dynamic stretching and sport-specific warm-up exercises being the most efficient. By enhancing neuromuscular coordination, raising core body temperature, and boosting blood flow, warm-up activities have also been found to lower the risk of injuries among tug-of-war competitors. However, elements like athlete skill level, warm-up intensity and duration, and warm-up exercise type may

have an impact on how effective warm-up exercises are. To optimize the advantages of warm-up regimens for tug-of-war performance, coaches and players should take these elements into account.

Benefits of Warm-Up for Athletes

As they prime the body both physically and mentally for the demands of athletic activity, warm-up exercises are a crucial part of sports performance and injury prevention (Bishop, 2018). Depending on the athlete and the activity, a warm-up may take anywhere from 5 to 30 minutes and usually includes low-intensity cardiovascular exercise, stretching, and sport-specific activities (Hough, 2021). Warm-up activities provide several advantages for athletes, which are well-documented in the literature (Fradkin, 2021). These advantages include increased athletic performance and decreased risk of injury. This review of the literature will look at the research on the advantages of warm-up exercises for athletes, including improved joint stability and muscular control, increased flexibility and range of motion, improved muscle activation and reaction time, improved cardiovascular function, improved neuromuscular coordination, and improved mental readiness and focus.

Improved Performance

An enhancement in an athlete's physical or technical ability that can be directly linked to the benefits of warm-up activities is referred to as improved performance. The basic objective of warm-up is to get the body and mind ready for the physical activity that will follow, and getting ready may result in increased performance in several ways. First of all, warm-up activities aid in boosting blood flow to the muscles, which raises their internal temperature. This rise in body temperature promotes higher joint flexibility and range of motion, which may enhance an athlete's capacity to carry out exercises that call for a lot of mobility or flexibility.

Increased flexibility and range of motion

Two significant advantages of including warm-up activities in an athlete's regimen are increased flexibility and range of motion. According to Hough and colleagues (Hough M. B., 2017) stretching activities may promote flexibility, which in turn can enhance athletic performance. Athletes who have a wider range of motion may produce more force and speed throughout their actions, giving them a competitive advantage in their sport. Dynamic stretching exercises as part of a warm-up regimen may greatly enhance basketball players' flexibility and vertical jump ability, according to research (Fradkin, 2021). The research concluded that dynamic stretching before exercise might be a useful strategy to improve flexibility and performance. Athletes may increase their flexibility and range of motion by warming up with dynamic stretching and other activities, which can help them, perform better in their sport.

Improved muscle activation and reaction time

In research on soccer players, (Binnie, 2019) and colleagues found that warm-up exercises improve muscle functions and reaction time. According to the study's findings, specific warm-up activities can be helpful for players in different activities ranges of motion, and muscle reaction time which can enhance the performance of players.

Warm-Up Protocols for Tug-of-war Athletes

Warm-up exercises should be created to stimulate the muscle groups utilized in tug-of-war and to enhance neuromuscular coordination, cardiovascular function, and range of motion to be ready for the demands of the activity (Binnie, 2019). The athletes that compete in tug-of-war may benefit from the following warm-up techniques:

General Warm-up Exercises

Jogging, jumping jacks, and high knees are examples of general warm-up activities that may raise heart rate, blood flow, and body temperature and get the body ready for more

strenuous activity (Fradkin, 2021). At a moderate intensity, these exercises should be carried out for 5 to 10 minutes.

Aerobic Exercises

Aerobic workouts may enhance cardiovascular health and oxygen transport to the muscles, which is crucial for the endurance needed for tug-of-war (Ekstrand, 2016). Examples of these activities include cycling, rowing, and jogging. These exercises should be done at a moderate to high intensity for 5 to 10 minutes.

Stretching Exercises

Exercises that increase flexibility and range of motion may help prevent injuries during static stretching exercises (Woods, 2017). With an emphasis on the lower body and back muscles, these exercises should be carried out for 30 to 60 seconds in each muscle group.

Mobility Exercises

Exercises that increase joint mobility and neuromuscular coordination, such as lunges, squats, and leg swings, may enhance tug-of-war ability (Hewett, 2019). The hips, knees, and ankles should be the primary targets of these exercises, which should be done for 10-15 repetitions on each side.

Specific Warm-Up Exercises

Pulling exercises using resistance bands or cables are good examples of a particular warm-up activity that may assist in engaging the specific muscle groups involved in the sport of tug of war (Binnie M. A., 2014). With an emphasis on the upper body and core muscles, these exercises should be done for 10-15 repetitions on each side.

Exercises Targeting Muscles Used In Tug-Of-War

Exercises for the quadriceps, hamstrings, glutes, and back muscles, which are employed in a tug of war, may increase physical strength and power, which are crucial for success in the activity. The emphasis of these exercises should be on compound movements like squats, deadlifts, and rows and they should be done for 8–12 repetitions each set.

Exercises Targeting Movements Specific to Tug-Of-War

Technique and coordination may be improved by exercises that target tug-of-war-specific actions, such as tugging a sled or rope, which may enhance performance in the sport. Focusing on explosive force and form, these exercises should be done for 10-15 repetitions on each side.

Timing and Duration of Warm-Up

To make sure that athletes are sufficiently prepared for the demands of the activity, without incurring weariness or injury, the time and length of the warm-up should be carefully examined. It is often advised to warm-up for 15 to 20 minutes before a competition or training session. Total body and lower extremity warm-up has the potential to both enhance performance and prevent injuries; however, no reviews have been conducted to determine whether and how these effects are replicated in the upper extremity. Considering the different injury mechanisms of common sites of upper and lower extremity injury3 4 and differing motor pathways to upper and lower body performance, warm-up effects on the upper extremity need focused investigation. (McCrary, 2015)

Variables

Dependent Variables

Performance was measured using various metrics, such as strength, endurance, agility, and overall team performance in tug-of-war competitions. Injury Risk is the occurrence and severity of injuries sustained by tug-of-war athletes during training or competitions. These injuries were measured using injury reports, medical assessments, or a standardized injury risk assessment scale.

Independent Variable

Warm-up Protocol: This refers to the specific warm-up routines that athletes perform before tug-of-war activities. The independent variable can include: Duration of warm-up (e.g., short, moderate, long) Type of warm-up exercises (e.g., dynamic stretching,

static stretching, and aerobic exercises) Intensity of warm-up (e.g., low, moderate, high) Frequency of warm-up sessions (e.g., daily, before competitions)

Research Methodology

Research is prevalent, and understanding research methods has helped us understand how we have come to accept what we accept as reality. Natural research methods are a range of approaches that are prepared scientifically and have major significance in the research process. The choice of research technique makes the procedure simple, practical, and trustworthy. This chapter contains and expounds on all the methods and techniques related to data collection and data validation, with a particular emphasis on the following sub-titles: research design, population, sample size, sampling procedure, research instruments, validity and reliability of the instruments, data analysis, sources of data, and limitations and challenges of the study. This chapter describes the steps that were undertaken to complete the study.

Research Design

This study is being carried out using a quantitative approach. The question "How many" is mostly addressed by quantitative data analysis. This research is carried out to analyze the effect of warm-up on performance and injury risk in tug-of-war athletes. The present research focuses on the current situation of the problem under investigation. Keeping in view the nature of the problem, the descriptive method of research was considered appropriate for the study.

Population

The population of this study consisted of 100 Tug-of-war Athletes from The Islamia University of Bahawalpur.

Sampling

Sampling is an essential part of all scientific procedures. The essence of sampling is the selection of a part (Sample) from the whole (Population) to make inferences about the whole. Simple random sampling is used to collect the data. So, the researcher distributed 50 questionnaires to the Tug-of-war Athletes of The Islamia University of Bahawalpur.

Data Collection

Data collection was carried out using a questionnaire. The questionnaire was divided into two sections: Section A consisted of demographic information about the participants, such as age, gender, and training experience. Section B contained questions related to the effect of warm-up on performance and injury risk in tug-of-war athletes. The questionnaire was distributed to Tug-of-war Athletes at The Islamia University of Bahawalpur, who met the inclusion criteria for the study. The participants were contacted via email and were given a brief explanation of the study's purpose and the procedures for data collection. Participants were asked to complete the questionnaire voluntarily and to provide honest and accurate responses.

Validity of the questionnaire

The importance of measuring the accuracy of research instruments known as accuracy (especially questionnaires) has been validated in several studies, respectively (Bolarinwa, 2015). In the current research study, the initial version of the questionnaire was sent to eminent PhD holders and experts in the School of Social Sciences to verify the content. Considering the expert's suggestions and recommendations, the researcher removed, added, and modified some items from the scale.

Pilot testing

Given the importance and significance of pilot testing of equipment in research, the self-prepared questionnaire included 30 athletes' tug-of-war athletes from Islamia

Strongly Agree	SA	5 Point
Agree	A	4 Points
Undecided	UD	3 Points
Disagree	DA	2 Points
Strongly Disagree	SDA	1 Points

University of Bahawalpur. The purpose of the pilot study was to pre-test a device developed on a small portion of a sample selected by the researcher. The questionnaire was improved considering the small sample feedback. The complexities and ambiguities identified by the athletes were removed in consultation with field supervisors and experts.

Reliability of the Questionnaire

For the ultimate goal of internal consistency of the parts, Cronbach's Alpha with coefficients was applied. Alfa Cronbach is a ratio of internal consistency; it is as many things are closely related. It is considered a percentage of the scale based on reliability. As (Straus, 2006) points out, Alpha Cronbach is nothing more than a measurable test - it is a coefficient of reliability (or consistency). Alfa Cronbach could be part of the normal between being tested and the relationship between the items.

The Cronbach's alpha coefficient measured the internal consistency coefficient of the questionnaire, and 99 items were 0.944 above the Cronbach's alpha coefficient level of 0.9 and had an excellent internal consistency coefficient.

Data Analysis

After collecting data, one sheet was administered with the code number. Coding is a process of putting numbers and classifying data (Jonson, 1995; 41) the coded data was analyzed by the researcher. The researcher used certain procedures like the sum of coded values, percentage distribution, and average of summed values, and also researcher analyzed the data from SPSS.

Statistical Analysis of Results

A questionnaire consisted of a rating scale; the following scale value was assigned to each five despondences. This analysis was done within the analysis software SPSS. From the score of the rating scale, the percentage was determined, and Graph representation was also given with the percentage analysis.

From the score of the rating scale, percentage and mean score were determined. For the mean score following formula was used.

Mean Score = FSA*5 + FA*4 + FUD*3 + FDA*2 + FSDA*1

Data Analysis and Interpretation

This chapter delves into the analysis and interpretation of data concerning warm-up exercises in the context of Tug of War. The chapter provides an introduction emphasizing the significance of warm-up routines in physical activities, discussing their potential benefits in terms of physical and mental preparation, injury prevention, and performance enhancement.

Table 1 Warm-up exercises are essential before participating in Tug of War.

		N	%	Mean	Std. Deviation
Skipping a warm-up routine before Tug-of-war negatively affects my performance	SDA	5	5.0%	3.80	1.16
	DA	11	11.0%		
	UD	16	16.0%		
	A	35	35.0%		
	SA	33	33.0%		

		N	%	Mean	Std. Deviation
Warm-up exercises are essential before participating in Tug of War.	UD	5	5.0%	4.74	0.54
	A	16	16.0%		
	SA	79	79.0%		

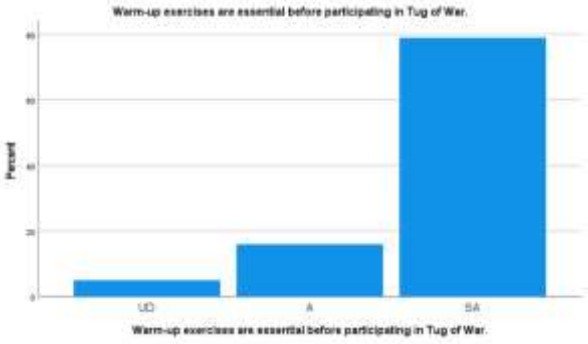

Table 1 shows that 5.0% of the participants were undecided about the importance of warm-up exercises, 16.0% agreed that they were important, and 79.0% strongly agreed that they were important.

Table 2 Warm-up exercises helped me prepare mentally and physically for Tug of War.

		N	%	Mean	Std. Deviation
Warm-up exercises help me prepare mentally and physically for Tug of War.	SDA	3	3.0%	3.74	1.01
	DA	8	8.0%		
	UD	21	21.0%		
	A	48	48.0%		
	SA	20	20		

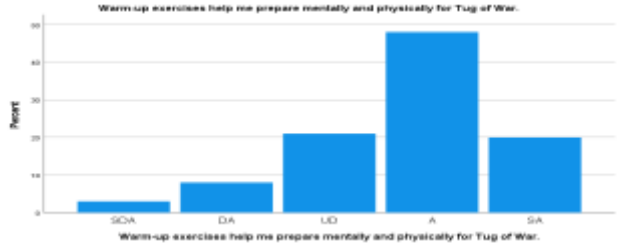

Table 1 shows that 3.0% of the participants strongly disagreed that warm-up exercises help them prepare mentally and physically for tug-of-war, 8.0% disagreed, 21.0% were undecided, 48.0% agreed, and 20.0% strongly agreed.

Table 3 Skipping a warm-up routine before Tug-of-war negatively affects my performance

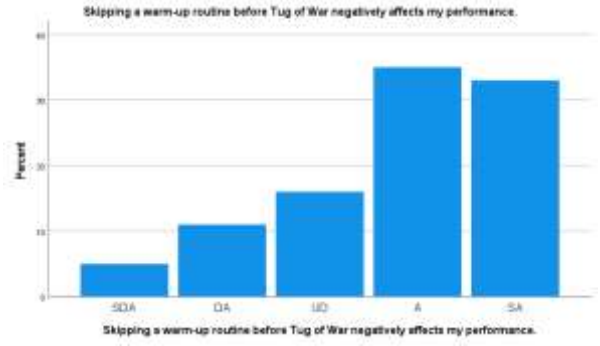

Table 3 shows that 5.0% of the participants strongly disagreed that skipping a warm-up routine negatively affects their performance, 11.0% disagreed, 16.0% were undecided, 35.0% agreed, and 33.0% strongly agreed.

Table 4 I feel that warming up before Tug-of-war reduces my fatigue during the competition.

		N	%	Mean	Std. Deviation
I feel that warming up before Tug-of-war reduces my fatigue during the competition.	SDA	5	5.0%	3.88	1.15
	DA	7	7.0%		
	UD	21	21.0%		
	A	29	29.0%		
	SA	38	38.0%		

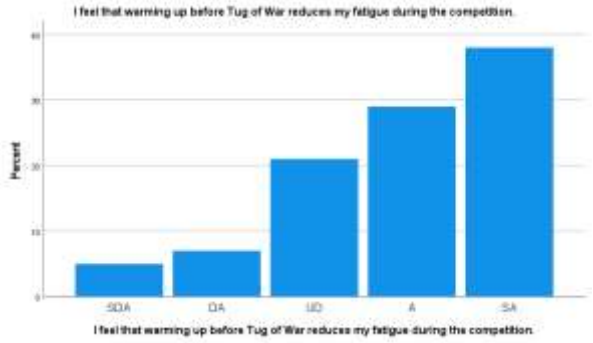

Table 4 shows that 5.0% of the participants strongly disagreed that skipping a warm-up routine negatively affects their performance, 11.0% disagreed, 16.0% were undecided, 35.0% agreed, and 33.0% strongly agreed.

Table 5 Warm-up exercises increase my flexibility, reducing the risk of muscle tears.

		N	%	Mean	Std. Deviation
Warm-up exercises increase my flexibility, reducing the risk of muscle tears.	SDA	3	3.0%	3.53	1.12
	DA	18	18.0%		
	UD	25	25.0%		
	A	31	31.0%		
	SA	23	23.0%		

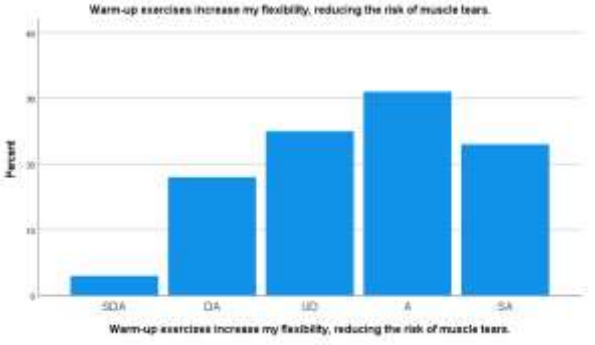

Table 5 shows that 3.0% of the respondents strongly disagree, 18.0% disagree, 25.0% are undecided, 31.0% agree,

and 23.0% strongly agree that warm-up exercises increase their flexibility, reducing the risk of muscle tears.

Table 6 A proper warm-up routine can reduce the risk of tug-of-war-related injuries.

		N	%	Mean	Std. Deviation
A proper warm-up routine can reduce the risk of Tug of War-related injuries.	SDA	1	1.0%	3.79	0.91
	DA	8	8.0%		
	UD	24	24.0%		
	A	45	45.0%		
	SA	22	22.0%		

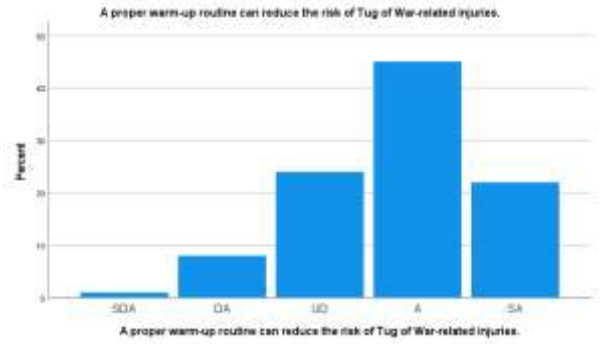

Table 6 shows that 1.0% of the respondents strongly disagree, 8.0% disagree, 24.0% are undecided, 45.0% agree, and 22.0% strongly agree that a proper warm-up routine can reduce the risk of tug-of-war-related injuries.

Table 7. Warm-up exercises are an essential component in preventing tug-of-war-related injuries.

		N	%	Mean	Std. Deviation
Warm-up exercises are an essential component in preventing tug-of-war-related injuries.	SDA	6	6.0%	3.75	1.18
	DA	10	10.0%		
	UD	19	19.0%		
	A	33	33.0%		
	SA	32	32.0%		

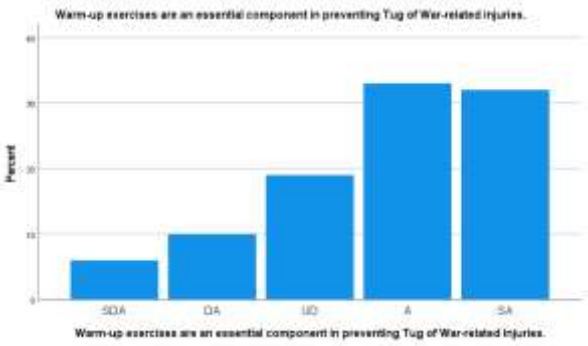

Table 7 shows that 6.0% of the respondents strongly disagree, 10.0% disagree, 19.0% are undecided, 33.0% agree, and 32.0% strongly agree that warm-up exercises are an essential component in preventing tug-of-war-related injuries.

Discussion and Analysis

The discussion elaborates on the essential role of warm-up exercises in improving Tug-of-war athletes' performance and well-being. The data indicates that warm-ups contribute to physical and mental fitness, injury prevention, confidence building, and reduced fatigue. Athletes also benefit from reduced muscle soreness, especially when adhering to consistent warm-up routines. Additionally, team-based warm-ups enhance team dynamics. These findings highlight the necessity of effective warm-up practices in Tug-of-war training and competition regimens, optimizing athletes' overall performance and experience.

The data analysis showed the significant positive influence of warm-up exercises on Tug-of-war athletes. Participants consistently recognized warm-ups as essential for physical and mental readiness, injury prevention, confidence enhancement, and fatigue reduction. Moreover, the data indicates that warm-ups are associated with reduced muscle soreness and are viewed favorably for promoting team cohesion. These findings collectively emphasize the critical role of well-structured warm-up routines in enhancing athletes' performance and overall well-being in the context of Tug of War.

Findings, Conclusion, And Recommendations

This chapter presents the findings, conclusion, recommendations, discussion, and analysis based on the data analysis and interpretation of warm-up exercises for Tug of War. This chapter aims to explore a comprehensive understanding of the results acquired from the data, draw meaningful conclusions, and put forward practical direction for coaches, trainers, and athletes.

Findings

After analyzing the data, various key findings emerged regarding the athlete's experiences with warm-up exercises in Tug of War. Firstly, a significant number of participants indicated the importance of warm-up exercises in making them physically and psychologically fit for the competition. They are convinced that warm-up exercises boost self-confidence, enhance strength and endurance, and performance of athletes. Participants also understand the function of warm-up exercises in injury prevention. They perceive that warm-up reduces muscle soreness and injury risk of strain and sprain. Furthermore, participants indicated that warm-up exercises helped in reducing mental stress-related injuries. The majority of respondents indicated that warm-up exercises negatively impacted their performance and increased the risk of injury. They understand the long-term benefits of warm-up properly and stretching exercises in warm-up activities. Participants explored and reduced the risk of injury in tug-of-war athletes. They were convinced that proper warm-up before the event helped them to maintain endurance and endurance during the competition, and also improve their overall performance. Additionally, the data indicates that participants perceived proper warm-up to reduce the injury rate. Many attributed this decrease to improved muscle preparation, enhanced flexibility, and increased awareness of their body's limitations and movement patterns.

Conclusion

Based on the findings, researchers concluded that warm-up exercises play an important role in Tug-of-war preparation and enhance performance. Participants' experiences and observations recommended that warm-up exercises have a significant impact on physical and psychological well-being and reduce the risk of injury in the tag of war athletes. The findings and conclusion of data analysis indicate the significant impact of warm-up activities on Tug-of-war performance and mental well-being. Athletes acknowledged the importance of warm-up activities in physical and mental preparation, injury prevention, confidence-building, muscle recovery, and different aspects of fitness. The data emphasizes the need for coaches, trainers, and athletes to prioritize and implement comprehensive warm-up exercise programs those specific requirements for Tug-of-war athletes. Warm-up exercises as an essential part of training and competition routines, participants can enhance their performance; reduce the risk of injuries, and positive attitude toward the event. These findings provide remarkable instructions for professionals to develop a comprehensive warm-up strategy to optimize the overall performance of tug-of-war athletes.

Recommendations

The following recommendations are provided for coaches, trainers, and athletes involved in Tug of War:

1. Coaches and trainers should emphasize on significant importance of warm physical and mental well-being to their trainees and athletes.
2. Design a comprehensive warm-up program for physical and mental preparation, including flexibility, strength, endurance, and injury reduction.
3. Recommended consistent and regular warm-up exercise before the Tug-of-war event to reduce the risk of injury.

4. Guide athletes, coaches, and trainers on warm-up activities to meet the specific needs of upcoming events.
5. To make the athletes aware of the long-term benefits of warm-up and highlight the benefits of warm-up in terms of enhancing performance and reducing the risk of injury to tug-of-war athletes.
6. Evaluate the warm-up activities regularly collect feedback from athletes and monitor their performance daily and injury rates. Make necessary changes to optimize warm-up protocols.

References

Binnie, J. (2019). *Relational comparison, queer urbanism and worlding cities.* (Vol. 8).

Binnie, M. A. (2014). Red meats: time for a paradigm shift in dietary advice. *Meat science,, 98*(3), 445-451.

Bishop, D. (2003). performance changes following active warm-up and how to structure the warm-up. *Sports medicine,, 33*, 483-498.

Bishop, R. &. (2018). Culture counts. *Changing power relations in education.*

Blume, H. K. (2012). Headache after pediatric traumatic brain injury. *a cohort study. Pediatrics, 129*(1), 31-39.

Bolarinwa, O. A. (2015). Principles and methods of validity and reliability testing of questionnaires used in social and health science researches. *Nigerian Postgraduate Medical Journal,, 24*(4), 195-201.

Ekstrand, J. W. (2016). amstring injuries have increased by 4% annually in men's professional football, since 2001: a 13-year longitudinal analysis of the UEFA Elite Club injury study. *British journal of sports medicine,, 12*(50), 731-737.

Fradkin, A. J. (2006). Does warming up prevent injury in sport?: The evidence from randomised controlled trials. . *Journal of Science and Medicine in Sport,, 9*(3), 214-220.

Fradkin, A. J. (2021). Effects of warming-up on physical performance: a systematic review with meta-analysis. *The Journal of Strength & Conditioning Research,, 24*(1), 140-148.

Häkkinen, M. V.-P. (2021). Screening of candidate regulators for cellulase and hemicellulase production in Trichoderma reesei and identification of a factor essential for cellulase production. *Biotechnology for biofuels*(7), 1-21.

Hewett, T. E. (2019). Video analysis of trunk and knee motion during non-contact anterior cruciate ligament injury in female athletes: lateral trunk and knee abduction motion are combined components of the injury mechanism. *British journal of sports medicine,, 43*(6), 417-422.

Hough, M. B. (2017). ttitudes to sentencing and trust in justice:. *exploring trends from the crime survey for England and Wales*.

Hough, M. J. (2019). Legitimacy, trust and compliance: . *An empirical test of procedural justice theory using the European Social Survey.*

Hough, M. J. (2021). Legitimacy, trust and compliance. *An empirical test of procedural justice theory using the European Social Survey*.

McCrary, J. M. (2015). . A systematic review of the effects of upper body warm-up on performance and injury. . *British journal of sports medicine, 49*(14), 935-942.

Rajest, S. S. (2022). A Brief on Past and Present a Tug-of-war in the Select Works of Kurt Vonnegut. *Central Asian Journal of Literature, Philosophy And Culture,, 4*(3), 59-79.

Siedentop, D. &. (2022). Human kinetics. *Introduction to physical education, fitness, and sport*.

Straus, S. M. (2006). Prolonged QTc interval and risk of sudden cardiac death in a population of older adults. *Journal of the American College of Cardiology,, 47*(2), 362-367.

Wood, P. B. (2019). *Fibromyalgia patients show an abnormal dopamine response to pain* (Vol. 25).

Woods, K. B. (2017). Warm-up and stretching in the prevention of muscular injury. . *Sports medicine, 37*, 1089-1099.