

Understanding NDUM Students Knowledge and Attitude to Sport Injury Management
(Tahap Pengetahuan dan Sikap Pelajar UPNM Terhadap Pengurusan Kecelakaan Sukan)

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ABSTRAK

Kajian ini melihat sikap dan pengetahuan pelajar UPNM (Universiti Pertahanan Nasional Malaysia) mengenai pengurusan kecederaan sukan. Kajian ini adalah tinjauan kuantitatif yang menilai 351 pelajar. Hasil kajian menyediakan gambaran menyeluruh tentang pengetahuan dan sikap peserta terhadap pengurusan kecederaan sukan. Keputusan menunjukkan tahap sikap yang rendah terhadap penjagaan kecederaan sukan ($\text{min} = 73.288$, $\text{SD} \pm 9.675$) dan tahap pengetahuan yang rendah ($\text{min} = 9.088$, $\text{SD} \pm 3.116$), dengan 52.4% melebihi dan 47.6% di bawah skor min, masing-masing. Berkaitan dengan jantina, penyertaan dalam sukan, dan status kecederaan dalam hubungannya dengan pengetahuan mengenai pengurusan kecederaan sukan dalam kalangan pelajar NDUM, dapatan kajian menunjukkan perbezaan yang signifikan berdasarkan jantina ($t(350) = -2.714$, $p < 0.05$) dan status kecederaan ($t(350) = -2.794$, $p < 0.05$). Pengetahuan dan sikap didapati mempunyai korelasi positif ($r = 0.244$, $p = 0.001$), menunjukkan bahawa pengetahuan dan sikap adalah berkaitan. Kajian ini mengenal pasti kelemahannya, seperti bias pelaporan diri, dan membuat cadangan untuk penyelidikan lanjut bagi menangani isu-isu ini. Dengan mengurangkan keperluan untuk perhatian perubatan bagi kecederaan yang boleh dielakkan, pemahaman yang lebih baik mengenai pengurusan kecederaan sukan boleh mengurangkan beban pada sistem penjagaan kesihatan dan membawa kepada penjimatan kos serta penyampaian penjagaan kesihatan yang lebih berkesan. Hasil kajian menawarkan pandangan untuk strategi pengajaran dan intervensi, dengan implikasi untuk mempromosikan keselamatan sukan dan pencegahan kecederaan dalam komuniti universiti.

Kata kunci: Pengetahuan, Sikap, Pengurusan Kecelakaan

ABSTRACT

This study looks into NDUM (National Defence University of Malaysia) students' attitudes and knowledge regarding sports injury management. The study is a quantitative survey that evaluates 351 students. The findings provide a comprehensive picture of the knowledge and attitudes of the participants regarding the management of sports injuries. The results indicate a low level of attitude towards sports injury care ($\text{mean} = 73.288$, $\text{SD} \pm 9.675$) and a low level of knowledge ($\text{mean} = 9.088$, $\text{SD} \pm 3.116$), with 52.4% above and 47.6% below the mean scores, respectively. Regarding gender, sports participation, and injury status in relation to knowledge of sports injury management among NDUM students, the findings revealed significant differences based on gender ($t(350) = -2.714$, $p < 0.05$) and injury status ($t(350) = -2.794$, $p < 0.05$). Knowledge and attitude were found to have a positive correlation ($r = 0.244$, $p = 0.001$), suggesting that knowledge and attitude are related. The study identifies its shortcomings, such as self-reporting bias, and makes recommendations for further research to address these issues. By decreasing the need for medical attention for avoidable injuries, a greater understanding of sports injury management can lessen the burden on the healthcare system and lead to cost savings and more effective healthcare delivery. The results offer insights for instructional strategies and interventions, with implications for promoting sports safety and injury prevention within the university community.

Keywords: Knowledge, Attitude, Injury Management

INTRODUCTION

Sports injuries are defined as injuries that happen most commonly during sports or physical activity, though they are not limited to athletes. In the end, sports injuries are related to those that athletes receive. The musculoskeletal system is impacted by the most common types of sports injuries in this situation. The network of bones, tendons, ligaments, muscles, and other tissues that stabilises and permits movement in the body is known as the musculoskeletal system (Panjabi, 1992). Sports injuries primarily come in two forms: acute and chronic. When someone is struck, falls, or twists a joint, they sustain an acute injury quickly, but chronic injuries develop gradually over time as a result of misusing one area of the body. Acute injuries include sprains and dislocations, while chronic injuries include stress fractures and shin splints (Kalkhoven et al., 2020).

In the realm of athletics and physical activity, sports injuries are a common and significant issue (Adirim & Cheng, 2003). Whether they compete professionally or as amateurs, athletes of all ages and skill levels are susceptible to a variety of injuries that can seriously affect their health and performance (Hulteen et al., 2018). These injuries can occur in many different parts of the body, from tendons and muscles to bones and joints, and they can be brought on by a number of different things, such as misuse, accidents, bad form, or the intense physical demands of exercise and sports (Hubley et al., 1984).

University students often possess diverse knowledge and perspectives regarding the prevention and management of sports injuries. These variables may be impacted by a variety of factors, such as past experiences, educational backgrounds, and personal interests (Wang et al., 2012). Some university students may be well-versed in the prevention and management of sports injuries due to their involvement in organised sports, physical education classes, or previous exposure to pertinent material (Wang et al., 2012). They might be aware of ideas like proper form and technique, warm-up and cool-down schedules, the importance of having enough sports equipment, and the necessity of rest and recovery (Navarro, 2011). The risk factors for common sports injuries, as well as the first steps to take in the event of an injury—such as the R.I.C.E. (Rest, Ice, Compression, Elevation) protocol—may also be known to the students (Scialoia et al., 2020).

Conversely, university students might not be as knowledgeable about managing and preventing sports

injuries (Al Attar et al., 2021). Students who did not participate in organised sports or physical education during their early school years might not know the basics (Mengxin, 2019). They might not understand the concepts of stretching, strengthening exercises, and injury evaluation. Views on sports injury treatment and prevention among university students may also diverge significantly. Certain individuals may possess a proactive and safety-conscious mindset, realising the importance of taking precautions to lessen the possibility of harm. It could involve being diligent about utilising safety gear, warming up before physical activity, and seeking medical attention when necessary (Pate, 1995). Given that recovery and rehabilitation are crucial steps in the process of treating sports injuries, the students may also have positive expectations for them (Heijne et al., 2008).

Conversely, some college students might place more value on performance and competition than on safety. According to Wilson and Clayton (2010), they might be more prone to push their physical limits, ignore warning signs of injury, or undervalue the significance of taking preventive action. These people may see injury as a temporary setback rather than a serious problem, and they may put off seeking professional medical attention in favour of "toughing it out." In summary, there is a wide range of multifaceted knowledge and attitudes among university students regarding the prevention and management of sports injuries (Bakar & Shahrudin, 2022). Personal experiences, educational exposure, and individual opinions may all shape them. Promoting a culture of safety and encouraging a holistic and informed approach to sports injury prevention and management through educational programmes can help ensure that all university students have the tools and attitudes necessary to protect themselves while participating in physical activities and sports (Van Beijsterveldt et al., 2017).

This study aims to assess the level of knowledge and attitudes toward sports injury management among NDUM students. Additionally, it seeks to examine the influence of gender, sports involvement, and injury status on students' knowledge and attitudes regarding sports injury management. Specifically, the objectives of this research are to determine the level of knowledge and attitudes toward sports injury management among NDUM students, to examine differences in knowledge and attitudes based on gender, sports involvement, and injury status, and to investigate the relationship between knowledge and attitudes toward sports injury management within this student population.

METHODOLOGY

Participants

The population for this study were students at the National Defence University of Malaysia. The population of NDUM student density was around 4000. Thus, the representative number of samples was 351 (determined by Krejcie and Morgan, 1970).

Survey Instrument and Measure

The study utilized a comprehensive questionnaire divided into three sections to assess demographic information, knowledge of sports injury prevention and management, and attitudes towards sports injury prevention and management. The questionnaire was translated into Bahasa Melayu by experts to ensure linguistic accuracy and clarity. Additionally, the validity of the instrument was established through expert reviews, where specialists provided feedback to enhance the content's relevance and comprehensiveness.

Cronbach's alpha values were used to evaluate the reliability of the study instrument to ensure its validity and consistency. A Cronbach's alpha score of 0.6 or higher offers a stable, consistent measure of the specific component. According to previous studies by Michie et al. (2002), the internal consistency for knowledge and attitude was considered acceptable at 0.68 and 0.78, respectively. A pilot study was conducted with 30 respondents (students not from NDUM), utilising the same questionnaire of real research. From the pilot study, the value of Cronbach's alpha was 0.60 for knowledge and 0.90 for attitude that indicates an acceptable value.

Therefore, based on the pilot study results and the established validity and reliability of the instrument, it can be concluded that the questionnaire is suitable for assessing respondents' demographic information, knowledge, and attitudes regarding sports injury prevention and management. This provides a solid foundation for conducting the main research study with confidence in the instrument's effectiveness.

RESULT

Demographic Characteristics

The analysis of demographic characteristics among the 351 respondents provides valuable insights into the profile of participants in the study. The majority of respondents were male (56.1%), with females comprising the remaining 43.9%. This gender

distribution indicates a slightly higher representation of males in the study population. Regarding age distribution, the largest proportion of participants fell within the age range of 21 to 23 years (49.3%), with smaller percentages in other age categories. Ethnic diversity was also observed among participants, with the majority being Malay (69.7%), followed by Chinese (18.8%), Indian (13.4%), and other ethnic groups (1.1%). In terms of education level, respondents varied from SPM (19.9%), Diploma (20.2%), Bachelor's Degree (54.4%), to Postgraduate (5.4%). This distribution suggests a diverse educational background among participants. The analysis also revealed preferences for different types of sports, with inversion sports being the most popular (60.7%), followed by racing games (12.3%), fielding sports (15.1%), and fighting sports (10.5%). Participants reported engaging in sports activities on various occasions, with the majority participating 1-2 days per week (31.9%) or 3-4 days per week (37.9%). Additionally, a significant portion (68.1%) of participants reported experiencing injuries during sports activities, indicating a potential area of concern for sports injury prevention and management strategies. Overall, the comprehensive overview of demographic characteristics, sports participation patterns, and injury experiences provides valuable insights for further research and interpretation. Understanding these factors is essential for developing targeted interventions and strategies to promote safer sports participation and enhance injury prevention and management practices among athletes and sports enthusiasts.

Level of Knowledge and Attitude of Sport Injury Management among NDUM Student

A thorough summary of participants' knowledge levels about several facets of sports injury care is given in Table 2. The knowledge items, denoted by unique codes ranging from B1 to B25, are accompanied by the total number of respondents (n) and the percentage (%) of those who answered correctly. The knowledge total mean score provides a quantitative assessment of participants' competency in each area. It is expressed as the mean and standard deviation (Mean $\pm$ SD). Among the noteworthy results is the variation in the proportion of right responses on various items. For example, questions about the best way to prevent heatstroke (B17) and how to identify heatstroke (B19) had comparatively higher correct response rates, whereas questions about using limb supports properly (B9) and treating shock appropriately (B25) had lower correct response rates.

TABLE 1. Demographic Characteristics (N=351)

	Variables	Frequency (n)	Percentage (%)
Gender	Male	197	56.1
	Female	154	43.9
Age	18-20 year	127	36.2
	21-23 year	173	49.3
	24-25 year	31	8.8
	25 years	20	5.7
Ethnicity	Malay	234	66.7
	Chinese	66	18.8
	Indian	47	13.4
	Other	4	1.1
Level of education	SPM	70	19.9
	Diploma	71	20.2
	Degree	191	54.4
	Postgraduate	19	5.4
Type of sport	Combat	37	10.5
	Racing game	43	12.3
	Invasion	213	60.7
	Net court	53	15.1
	Fielding	1	0.3
	Target sport	3	0.9
	E-sport	1	0.3
Total practicing days a week	1-2 day/week	112	31.9
	3-4 day/week	133	37.9
	5-6 day/week	79	22.5
	7 day/week	27	7.7
Level of sport involvement	International	4	1.1
	National	56	16.0
	State	89	25.4
	District	96	27.4
	University	106	30.2
Duration of involvement in sport	Beginner	154	43.9
	Amateur	174	49.6
	Professional	23	6.6
Have been injured while doing sports activities?	Yes	239	68.1
	No	112	31.9
State the status of injury experienced during the sports activity?	No injury	43	12.3
	With injury	308	87.7

TABLE 2. Knowledge on Sports Injury Management

Item code	Knowledge item	Correct respond	
		n	%
B1	Sports protective devices are helpful to stabilize joints. There are used for?	164	46.7
B2	What do we call a sports injury that damages the ligaments?	208	59.3
B3	What do we call a sports injury that damages the muscles and tendons?	210	59.8
B4	What do we call a sports injury that displaces a bone due to collision with external force?	100	28.5
B5	The standard procedure to treat a sports injury does not include	110	31.3
B6	What is the first-aid method for strains?	96	27.4
B7	The purpose of learning correct sports injury handling principles is not to.	98	27.9
B8	After injury what should you do to hasten your return to the sports field?	95	27.1
B9	How to use limb supports correctly?	220	62.7
B10	Which one of the following is the wrong way to support a limb?	55	15.7
B11	What is the correct way to use a bandage?	52	14.8
B12	What is the cardiac massage frequency per minute when applying CPR to teenagers?	83	23.6
B13	What is the ratio of cardiac massage to breathing per minute when applying CPR to adults?	220	62.7
B14	What is the interval between hot/cold compresses?	48	13.7
B15	How long should a hot or cold compress be applied for a sports injury?	66	18.8
B16	What is the reason for heatstroke?	245	69.8
B17	What is the best preventive action to avoid heatstroke?	109	31.1
B18	What action should not be followed when someone suffers overheating during exercise?	30	8.5
B 19	What is heatstroke?	140	39.9
B 20	Which one of the following is not a symptom of heatstroke?	58	16.5
B 21	What is the purpose of dressing a bleeding wound?	103	29.3
B 22	Which one of the following is the wrong way to treat a bleeding wound?	47	13.4
B 23	What should be done to treat a severely bleeding wound?	233	66.4
B 24	What is shocked?	214	61.0
B 25	Which one of the following methods is the wrong way to treat shock?	208	59.3

The mean score for general knowledge, which is 9.088 (SD $\pm$ 3.116), offers a comprehensive evaluation of the individuals' knowledge levels. Furthermore, a more nuanced assessment of the distribution of knowledge within the questioned population is made possible by grouping respondents into low and high knowledge groups based on scores above and below the mean (Bloom's cut off point; >50% high level of

knowledge, <50% poor/low level of knowledge). In addition to offering a thorough overview of participants' knowledge, Table 3 findings also highlight possible areas for focused educational interventions aimed at enhancing participants' understanding of certain sports injuries. In summary, NDUM students have a low degree of knowledge about managing sports injuries, as seen by their 88.6% scoring below the mean.

TABLE 3. Level of Knowledge Based on Total Mean Score.

Variables	Knowledge n (%)
Low	311 (88.6)
High	40 (11.4)

Gender, Sport Involvement, and Injury Status with Knowledge on Sport Injury Management among NDUM Student

The analysis of knowledge scores among respondents based on gender and injury status reveals noteworthy findings. Firstly, regarding gender differences, the mean knowledge score for females (9.603 ± 3.351) is higher than that of males (8.685 ± 2.862). This difference is statistically significant, as indicated by the t-value of -2.714 and the associated p-value (< 0.05). Therefore, it can be concluded that females exhibit a higher level of knowledge regarding sport injury prevention and management compared to males in the study population. Secondly, concerning injury status, individuals who reported experiencing an injury have a slightly higher mean knowledge score (1.133 ± 0.341)

compared to those who did not report an injury (1.071 ± 0.258). The t-value of -2.794 and the associated p-value (< 0.05) indicate a statistically significant difference in knowledge scores based on injury status. Thus, it can be inferred that individuals who have experienced sports injuries tend to possess slightly higher levels of knowledge regarding injury prevention and management compared to those who have not experienced injuries. Overall, these findings highlight the importance of considering gender and injury status when assessing knowledge levels related to sport injury prevention and management. Understanding these differences can inform targeted interventions and educational programs aimed at enhancing knowledge and promoting safer sports participation practices among athletes and sports enthusiasts.

TABLE 4. Gender, Injury Status and Sport Involvement with Knowledge.

Factor	Knowledge score (Mean $\pm$ SD)	t value
Gender		-2.714*
Male	8.685 (2.862)	
Female	9.603 (3.351)	
Injury status		-2.794*
Yes	1.133 (0.341)	
No	1.071 (0.258)	
Sport involvement		p value 19.867*
Beginner	1.110 (0.314)	
Amateur	1.051 (0.222)	
Professional	1.608 (0.499)	

*p<0.05

There is a difference in the mean knowledge scores for amateurs (1.051 , $SD \pm 0.222$), professionals (1.608 , $SD \pm 0.499$), and beginners (1.110 , $SD \pm 0.314$). There is a statistically significant difference in knowledge scores between these athletic engagement

groups, as shown by a calculated p-value of 19.867. Overall, these statistical analyses show that the knowledge scores in the population according to study are significantly influenced by gender, injury status, and participation in sports.

Gender, Sport Involvement, and Injury Status with Attitude on Sport Injury Management among NDUM Student

The findings in Table 5 display t-values and p-values for three variables: gender, injury status, and sport involvement, in addition to attitude ratings, mean values, and standard deviations. When taking gender into account, men's mean attitude score is 72.827 (SD

± 10.675), while women's is slightly higher at 73.876 (SD ± 8.217). A marginal difference is indicated by the t-value of -1.008, but it is not statistically significant, according to the p-value (< 0.05). Regarding injury status, the mean attitude score of respondents who have reported an injury is 73.782 (SD ± 9.874), while the slightly higher mean score for those who have not reported an ailment is 72.232 (SD ± 9.190).

TABLE 5. Gender, Injury Status and Sport Involvement with Attitude

Factor	Attitude score (Mean $\pm$ SD)	t value
Gender		-1.008
Male	72.827 (10.675)	
Female	73.876 (8.217)	
Injury status		1.438
Yes	73.782 (9.874)	
No	72.232 (9.190)	
Sport involvement		p value
		1.250
Beginner	73.720 (8.497)	
Amateur	73.298 (8.819)	
Professional	70.304 (19.098)	

*p<0.05

The t-value of 1.438 and p-value (< 0.05) indicate that there is no significant difference in attitude ratings based on injury status. In summary, the mean attitude score for Beginners, Amateurs, and Professionals regarding sport involvement is 73.720 (SD ± 8.497), 73.298 (SD ± 8.819), and 70.304 (SD ± 19.098), which is somewhat lower. There is no statistically significant difference in the attitude ratings between these athletic engagement groups, according to the estimated p-value of 1.250. In conclusion, the statistical analyses demonstrate that there were no significant differences in attitude ratings among the examined group based on gender, injury status, or sport activity.

Association between Knowledge and Attitude of Sport Injury Management among NDUM Students

Regarding "Knowledge," the average score is 2.481, with a standard deviation (SD) of ± 0.148 , indicating

the participants' overall understanding of important concepts. However, the variable "Attitude" shows the attitudes that are common among the research group with a mean score of 4.071 and an SD of ± 0.537 . The findings presented in Table 4.8 offer valuable perspectives on the connections between attitude and knowledge among NDUM students. In particular, there is a positive correlation ($r(349) = 0.244$, $p = 0.001$) between knowledge and attitude, suggesting that these two variables are related. This implies that a person's attitude towards sports injury management is correlated with their level of knowledge about the subject. This finding aligns with Wang et al. (2012), who indicated that sports injury management knowledge does influence views and behaviours toward injury prevention. This association indicates that, to some extent, those with better knowledge scores have more favourable views. The limited correlation, on the other hand, highlights the need for a more in-depth investigation of the factors impacting knowledge and attitude outcomes.

TABLE 6. Correlation Between Knowledge and Attitude

Variables	Mean	± SD	Knowledge	Attitude
Knowledge	2.481	0.148	1	
Attitude	4.071	0.537	0.244**	1

**Correlation is significant at the 0.01 level (2-tailed)

DISCUSSION

The purpose of this study is to assess NDUM students' degree of sports injury management knowledge and attitude. The study's findings demonstrated a poor/low level of knowledge (<50%) held by NDUM students. This may have happened as a result of different students receiving different information about sports injury care at universities. Furthermore, the mean score indicates that their attitude is at a low level. This is comparable to earlier research by Wang et al. (2012), which found similar levels of knowledge and attitude. A lack of enthusiasm for managing sports injuries may stem from the students' own exposure and experiences. According to other research, students' emotions and belief systems also have an impact on their attitudes (Wang et al., 2012). Moreover, knowledge on sports injury management between genders shows significant differences. This might be due to unequal exposure to information on sports injury management between male and female students at university (Kuo-Ming Wang and Yi-ching Huang, 2006). On the other hand, from the analysis of gender and injury status, the results have significant differences towards the attitude similar to a previous study by Sohail & Sana Ashraf, (2022).

This might be due to, when students have firsthand experience with injuries, they frequently get a realistic understanding of the implications and problems that come with such situations. This experience data may include understanding the need of timely and appropriate therapy, identifying early warning signs and symptoms, and understanding the causes of injuries. Essentially, practical experience reinforces the theoretical knowledge acquired via traditional educational courses while providing a genuine context for learning. It's interesting to see that students without injury experience have a positive attitude towards managing sports injuries. This may have something to do with their desire to avoid getting hurt.

In addition, a positive attitude can help with sports injury management by encouraging a proactive and preventative approach (Richmond et al., 2014). Positive attitudes among students may increase their likelihood of engaging in risk-reducing actions, such as proper warm-ups, observing safety regulations, and

donning protective gear. Additionally, if an accident happens, a positive outlook can promote perseverance and commitment during the recovery period, promoting adherence to treatment plans and rehabilitation protocols (Patel & Nelson, 2000).

The level of sport involvement divided into three categories, which are beginner, amateur and professional, have differences with knowledge on sports injury management. This might be because university students who participate in sports at novice, amateur, or professional levels may have received different instruction and training in the management of sports-related injuries. Sport participation may have a significant influence on the body of knowledge if educational courses on injury prevention, recognition, and management are harmonised. The link between knowledge and attitude was examined using a Pearson correlation analysis, and the findings showed a strong positive association. This suggested a cogent and all-encompassing strategy wherein those with greater knowledge cultivate more optimistic attitudes, fostering an atmosphere that is favourable to the efficient prevention and treatment of injuries.

CONCLUSION

In concluding this study on the knowledge and attitudes towards sports injury management among NDUM students, several key findings and implications have emerged. The study aims to give significant insights into how students at the National Defence University of Malaysia perceive, comprehend, and address sports-related injuries.

The quantitative study found that NDUM students had a low degree of knowledge and generally low attitudes. According to the correlation analysis, there is a significant positive association between knowledge and attitudes ($r(349) = 0.244, p=0.01$), showing that students with knowledge had more association attitudes towards sports injury care.

The quantitative results offer a more profound comprehension of students' awareness, cognition, and conduct. Themes that surfaced from the qualitative data included the effect of educational interventions,

opinions on preventative measures, and the impact of cultural factors on attitudes toward sports injury care.

Despite the insightful information provided, it is important to acknowledge the limitations of the study. The results are limited to NDUM students, and self-reporting bias may have affected participants' responses. Subsequent investigations might potentially surmount these constraints by using objective evaluations and expanding the scope to encompass students from diverse backgrounds.

This study has consequences that go beyond the confines of academia. Focused educational interventions and awareness campaigns are necessary, according to the knowledge gaps and attitudes about sports injury care among NDUM students that were discovered. These findings might potentially enhance sports safety and injury prevention at the college level by being included in the curricula and extracurricular activities. In conclusion this study provides a foundation for future research and interventions to enhance NDUM students' knowledge and attitudes toward sports injuries. Addressing these problems can help the university community develop a sports culture that is safer and better informed. However, time constraints in data collection, processing and interpretation may have limited the scope and depth of this study.

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