



Injuries of University of Santo Tomas college teams during the University Athletics Association of the Philippines Season 69

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ABSTRACT

Objectives: Sports have been recognized as a favorite activity among Filipinos. With increased participation in sports and physical activity, the potential for an increase in the number of injuries is very likely. This study aims to identify the most common injury incurred by the members of the University of Santo Tomas (UST) College Teams and to identify the body areas commonly affected. **Methodology:** This is a descriptive study that monitored injuries incurred by members of the UST College varsity teams that participated in the University Athletics Association of the Philippines (UAAP) Season 69. There were six team sports (men's and women's basketball, men's and women's volleyball, men's and women's soccer) and six individual and dual sports (men's and women's tennis, athletics, swimming, taekwondo, and judo). The Australian Sports Injury Data Dictionary was utilized to document all injuries throughout the duration of the competition. Monitoring of injuries was done by licensed physical therapists who recorded information on the following: type of activity at the time of injury, body region injured, and nature and cause of injury. **Results:** A total of 185 injuries were reported for all the 8 sports of the UST teams monitored during the 69th UAAP season. The most commonly injured body part was the knee (32), followed by the lower leg (29) and ankle (24). Majority of the injuries occurred during competition. The most prevalent nature of injury was classified as "others" that included cramps or temperature-related problems. **Conclusion:** Relative risk of injury was considerably higher in basketball among the team sports and taekwondo for individual sports.

Keywords: sports injury, UAAP (non-MeSH), injury reporting

INTRODUCTION

Sports have been recognized as a favorite activity among Filipinos. Aside from being a form of recreation, they play a role in the management and prevention of numerous negative health conditions such as cardiac diseases, some cancers, diabetes, osteoporosis and associated fractures¹⁻³. Participation in organized collegiate sports activities has been increasingly popular among Filipino male and female students not just for its health benefits but also for its effects on their psycho-social well-being. Studies have shown that students who participate in sports realize emotional⁴ and intellectual benefits during their academic years and throughout life⁵. Participation in sports activities increases team participation skills and facilitates emotional development⁵.

Since 1938, the University Athletics Association of the Philippines (UAAP) has been organizing inter-university sports in the country. The University of Santo Tomas (UST) has been actively engaged in this event and has been participating in

basketball, volleyball, baseball, football, swimming, track and field, table tennis, and lawn tennis. Although participation in physical activity is being promoted in the university, another important health concern is the incidence of injuries that may be associated with physical activity and sports. With maximized participation in these activities, the potential for injuries increases. In this case, the benefits attributed to sports participation should be considered amidst the risks associated with injury.

A sports injury is defined as an event or incident, which occurred during training or competition that necessitated attention from team physiotherapist or physician and resulted in an absence of one or more sessions of training or matches⁶. Some of the most common injuries include sprains, strains, dislocation, fractures and in more serious cases, concussion and head injuries. Injuries may cause an athlete to be sidelined from a game or may not totally be allowed to return to the competition. Injury to those involved in sports has also been reported to have a substantial psychological impact⁷. Comparisons of athletes before and after an injury have shown greater mood disturbance,

lowered self-esteem, and increased depression after an injury^{8,9}.

To date, there are no published literatures on the occurrence of sports injuries among college students, particularly in the teams of the UAAP. It is likely that injuries incurred at the student level of participation differ from those for elite and professional players¹⁰. It is important therefore to understand the incidence and nature of sports injuries at their level. This can lead to the development and implementation of health strategies for sports injury prevention among UST-UAAP players. This is the first prospective study of sports injuries among UST-UAAP players.

The aims of the study were to identify the most common injury incurred by the members of the UST UAAP teams and to identify the body areas most commonly affected.

METHODOLOGY

This paper was a descriptive study of the injuries sustained by UST college teams participating in the UAAP Season 69. The team sports consisted of the men's and women's basketball, men's and women's volleyball, men's and women's soccer, while the individual and dual sports were composed of the men's and women's tennis, athletics, swimming, taekwondo, and judo. All players of the different teams gave their consent. Approval to conduct the study was obtained from the Research Center for Health Sciences.

Pre-injury monitoring

The Australian Sport Injury Report Form¹¹ was adapted from the Sports Medicine of Australia. The need for national sports injury data and information system was considered of high priority in 1997 by the Australian Sports Injury Prevention Taskforce (ASIPT). ASIPT aimed to standardize the approach to the collection of injury data in a variety of sport settings. The National Data Standards for Injury Surveillance Version 2.1 (NDSIS v2.1), International Classification of Diseases Version 9 and 10 (ICD 9 and 10), Orchard Sports Injury Classification System (OSICS) and samples of national and international injury data collection forms were used as bases to design the Australian Sport Injury Report Form¹¹.

The research team of the University of Santo Tomas Center for Research and Movement Science is composed of licensed physical therapists. The Australian Sport Injury Report Form was utilized to monitor injuries. An orientation for all researchers on how to use the instrument and document injuries was conducted before the start of the season. Background information of the athletes including age, height, weight, and position in the team, were collected.

The schedule of training and competition of all sporting events was obtained from the organizers. A researcher was assigned to monitor each sport.

Actual Injury Monitoring

An injury was defined as any physical complaint incurred during the training or actual competition that received medical attention from the team physician or physical therapist. Once an injury is sustained, the researcher assigned to the sport immediately accomplishes the injury form to allow accuracy of data. The use of identical injury report form for all types of sports covered by this study allowed similar method of data collection by all the researchers.

The single-page data sheet recorded information on the following: type of activity at the time of injury, body region injured, and nature and cause of injury including the exact mechanism.

After every competition, data was recorded using Microsoft Excel. Data were summarized using percentages and frequency tables. Relative risk for injury was computed for each monitored sport.

RESULTS

Table 1 presents the number, type of activity at time of injury, the injured body part, and the nature of injury for the eight UST Teams that competed in the 69th season of the UAAP.

Basketball

Sixty one (61) injuries were reported during all the seniors male and female basketball matches in the UAAP season. Majority of the injuries affected the ankle (20%) and lower leg (18%) followed by the knee (16%), arm (13%) and head and neck (11%). The most common nature of injury or common diagnoses were categorized as others (63%) which were mainly due to cramps or temperature related injuries (25%) and gastric problems caused by food intake, followed by sprain (15%) and abrasion/blister (10%). Majority of the injuries (66%) did not result to absences from competition and training and the players were able to return to the game or activity without restrictions.

The Senior male basketball players encountered more injuries (40) compared to their female counterparts (21). Males also suffered more temperature related injuries like cramps, which may indicate problems with fluid replacement and hydration during competition.

Volleyball

A total of 27 injuries were reported during the season. Majority of the injuries (75%) were suffered by the female volleyball players. Majority of the injuries affected the knees (30%) followed by the shoulder (15%) and foot (15%). The most frequent

type of injuries were categorized as "others," or injuries due to cramps or temperature related, pain, inflammation or reparatory in nature which accounted for 55% of all injuries followed by contusion (19%), sprain and strain (11%) and dislocation (4%). Almost 81% of the injuries happened during competition and were incurred due to falls, stumbling or awkward landing. Around 78% of those injured were able to return to play or activity without restrictions while 22% were able to return but with restrictions.

Knees accounted for most of the injuries suffered by male (3) and female (5) volleyball players with falls, stumbling or awkward landing as the foremost mechanism of injury. Shoulder injuries (4) were also common for female players.

Soccer

From the 8 matches of the Men's Soccer Team, a total of 24 injuries were reported. Majority of injuries affected the lower extremities (75%) followed by the upper extremities (21%) and trunk (4%). The most frequent types of injuries were sprains (29%) and lacerations/abrasions/blisters (29%). The uneven surface of the field accounted for the majority of these injuries. A greater number of injuries occurred more frequently during the competition (58%) than during training (42%). Midfielders had the most number of injuries (40%) followed by the strikers (27%), defenders (20%) and goal keepers (13%). Most of the injured players (65%) were able to return to play, while the remaining athletes (35%) were not allowed to return to the game.

From a total of 7 matches, the women's soccer team (13) had lesser number of injuries as compared to the men's team (24). Majority of the injuries likewise commonly occurred in the lower extremities (62%) followed by the upper extremities (23%) and head (15%). Contusions (38%) ranked first in the type of injuries sustained by the athletes, closely followed by sprains (31%). Collision with opponents was the usual cause of contusions, while the playing surface accounted for the majority of sprains. Seventy-eight percent (78%) of injuries occurred during the competition while the remaining 22% took place during training. For the women, the midfielders have equally low incidence of injury as that of the goalkeepers. The strikers and the defenders of the team had the most number of injuries. Not one of the players was sidelined because of injury.

Tennis

There were five injuries reported for the men's team. All of the reported injuries were incurred during competition. The most common type of injury reported was temperature-related disorder (60%), followed by sprain (20%), and contusion (20%). Temperature-related disorders

documented were cramps of the muscles of the thighs and calf. Two of this type of injury required emergency hospital care for the athletes. All reported injuries affected the lower extremities, including lateral ankle sprain due to a slip and contusion on the medial side of the thigh due to being struck by the tennis racquet.

Only two injuries were reported for the women's team, and these happened during the physiologic assessment of the athletes. The types of injury were contusion on the cheek area and abrasion on the knee. There were no injuries reported during the actual training and competition phases.

Athletics

Seven injuries were reported from the different athletic events. Of the 7 injuries, 57% were reported for the males, and 47% for the females. The majority (71%) of the injuries was incurred during the competition phase and 29% were reported during the training period. The proportion of injuries incurred for the different events were as follows: heptathlon/decaathlon (29%), hurdles (29%), long distance (14%), pole vault (14%), and sprints (14%).

Majority of the injuries that occurred affected the lower extremities (86%), compared with injuries of the head (14%). For the lower extremity injuries, the body part most affected was the thigh, followed by the knee, and the leg. The nature of lower extremity injuries were classified as overuse injuries (50%) followed by contusion (16.7%), abrasion (16.7%), and strain (16.7%). The reported head injury was due to contusion when the pole struck the athlete's nose.

Swimming

There were only 2 reported injuries in swimming and both were sustained during the actual competition. One male athlete was diagnosed with Medial collateral ligament sprain from a wrong move after touching the wall of the pool and making a turn during the competition while another female swimmer experienced cramps involving the thigh muscles.

Taekwondo

All Taekwondo players across all categories were injured during the training days. Muscle contusion was the most common injury (18) in the men and women's team. This occurred mostly during the sparring events and kicking on pads and shields.

Judo

All fourteen Judo players were injured. Eight out of the fourteen athletes were injured during the competition. Nine (9) athletes sustained new injuries. Six (6) of these injuries were incurred during the competition. The lower extremity joints

Tournament	Men's Basketball	Women's Basketball	Men's Volleyball	Women's Volleyball	Men's Soccer	Women's Soccer	Men's Tennis	Women's Tennis	Athletics	Swimming	Taekwondo (Men)	Taekwondo (Women)	Judo
No. of players	14	13	18	18	18	24	10	8	36	19	14	15	14
No. of injured players	14	9	6	13	15	13	3	2	7	2	14	15	14
No. of injuries	40	21	6	21	24	13	5	2	7	2	15	15	14
Type of activity at time of injury													
Training/practice	16	5	5	17	10	3	0	0	2	0	9	13	6
Competition	24	16	1	4	14	10	5	0	5	2	6	2	8
Other	0	0	0	0	0	0	0	2	0	0	0	0	0
Injured body part:													
Head, neck	3	4	0	0	0	2	0	1	1	0	2	1	1
Trunk	1	1	0	2	1	0	0	0	0	0	1	2	0
Shoulder	0	0	0	4	3	0	0	0	0	0	0	0	0
Arm, upper/lower	8	0	0	0	0	2	0	0	0	0	1	0	0
Elbow	0	1	0	1	2	0	0	0	0	1	0	0	2
Hand, including wrist, finger	0	4	2	1	0	1	0	0	0	0	2	0	1
Hip/groin	0	0	0	0	3	0	0	0	0	0	0	0	0
Thigh	0	0	0	1	2	0	3	0	3	0	3	0	2
Knee	4	2	0	5	4	3	0	0	2	1	0	1	2
Lower leg	6	4	3	5	4	3	0	1	2	0	0	2	2
Ankle	9	2	0	3	1	1	3	0	1	0	2	5	2
Foot/toe	9	3	1	1	5	1	1	0	0	0	0	1	2
Forefoot	0	0	0	3	3	3	0	0	0	0	4	3	1
Nature of injury													
Concussion	0	1	0	0	0	0	0	0	0	0	0	1	1
Contusion	1	2	2	3	5	5	1	1	2	0	8	10	1
Dislocation	0	0	0	1	1	0	0	0	0	0	1	0	1
Fracture	0	0	0	0	0	1	0	0	0	0	0	0	0
Laceration/abrasion/blister	2	4	0	0	7	2	0	1	1	0	2	0	1
Sprain	2	7	1	2	7	4	0	1	0	1	0	1	2
Strain/muscle fiber rupture	0	2	1	2	4	1	0	0	1	0	2	1	0
Tendon/ligament rupture	1	0	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous	0	0	0	0	0	0	0	0	0	0	0	0	0
Others	34	5	2	13	0	0	3	0	3	1	0	1	8

Table 1. Number and diagnosis of injuries in eight monitored sports of the University of Santo Tomas in the 69th UAAP Season

(9) were involved in injuries more than the upper extremities (5) and head/neck joints (1).

Relative Risk of Injury

In computing for relative risk of injury, the teams were grouped into team sports (basketball, volleyball and soccer) and individual/dual sports (tennis, athletic, swimming, taekwondo and judo).

Among the team sports, basketball had the highest relative risk compared to soccer and volleyball. In the Individual/Dual sports, Taekwondo had the highest relative risk among the sports in this category (Table 2).

Team Sports	Relative Risk	Individual/Dual Sports	Relative Risk
Basketball	1.43	Taekwondo	3.22
Soccer	1.00	Judo	2.30
Volleyball	0.71	Tennis	0.50
		Athletics	0.30
		Swimming	0.17

Table 2. Relative risk of injury in team sports and individual/dual sports

DISCUSSION

The present study is a descriptive study of injuries in the eight sports of the University of Santo Tomas during the 69th UAAP. This is the first time that an injury reporting system was implemented to determine the major causes of injury during training and competition thus providing valuable information for preventive measures in the future.

The overall incidence of injury cannot be determined since not all sports monitored were team sports. Swimming, athletics, taekwondo, tennis, and judo have individual competitions based on weight or expertise of athletes.

Based on the results among team sports, basketball (61) showed the highest number of injuries followed by soccer (37), and volleyball (27). This is in contrast with the results of the study made by Junge et al where soccer players showed to be at a greater risk than basketball players¹². While the authors believe that soccer is a collision sport compared to basketball, injuries therefore are more likely to happen. The results showed otherwise. The UAAP sports tournament highlights the basketball competition since this is a more famous sport in the Philippines, which may account to the increased competitiveness among basketball players, thus resulting to more injuries.

For individual/dual sports, taekwondo players are more likely to be injured than the players of the other dual and individual sports. The high relative risk in judo and taekwondo may be attributed to the contact nature of the sport. Judo is a combat sport with the goal of taking the opponents down

by submitting and pinning them on the ground¹³. Taekwondo, on the other hand, is also a combat sport popular for its kicking technique. It considers the leg as the longest and strongest weapon thereby having greatest potential to execute powerful strikes without successful retaliation¹³.

The most common type of injury reported during the 69th UAAP season by the UST players was categorized as "Others." Majority of injuries in this category were temperature related with very few instances on gastric problems. Cramps are painful, involuntary contractions of skeletal muscle that often occur during or after prolonged physical exertion. Muscle cramps or spasm is induced by imbalance of calcium in the contraction of the muscle motor unit site¹⁴. Factors that may lead to cramps include overheating, dehydration and lack of oxygen intake of the muscles. It is important to note that most of the venues where the sports events were held were poorly ventilated. Muscles that have previously been injured are likewise more prone to cramps than non-injured muscles¹⁴.

Knees (32) followed by the lower leg (29) and ankle (24) were the most commonly injured parts of the body across all sports. Similar to the results obtained from studies of Verhagen et al¹⁵, Lilley et al¹⁶, Labella¹⁷, and Pluim et al¹⁸, most sports injuries affected the lower extremities. Games which involved cutting, pivoting, and twisting movements placed the lower limb at particular risk of injury¹⁸. It is therefore expected that lower extremity injuries are more common than upper extremity injuries. Knee injuries occur as a result of a collision or kicks applied to an opponent. Lower leg injuries may be due to training errors, alignment anomalies and poor technique in playing the sport¹⁶. Ankle injury is also a common occurrence caused by landing on another player's foot or an uneven court surface. Foot reversal, during training and competition, happened due to violent flexion during an unexpected blocking. Other mechanisms of ankle injuries include sharp twist or turn, collision, fall, sudden stopping, and tripping¹⁹.

In sports where players are categorized according to gender, males (74%) were more commonly injured than females (67%). In a study by Hillier et al, males were at a greater risk for injury because they perceive risk differently and are more likely to engage in risk-taking behavior than females¹². Injuries suffered were almost similar for both genders, with the lower extremities sustaining more injuries than the upper extremities.

Majority of the injuries occurred during the competition, which may indicate fierce rivalry between member universities of the UAAP. Injuries during the competition were common in men's and women's basketball, men's and women's soccer, men's tennis, athletics, swimming, and judo. Post

injury or tertiary prevention has been administered to minimize the long-term detrimental effect of an injury event. Strategies included trainer assessment, coach recognition of injury severity, appropriate use of emergency medical care and compliance with rehabilitation.

Injuries obtained by athletes in men's and women's volleyball, and men's and women's taekwondo were more frequent during training than during the competition. Pre-season exercise regimen may be used to keep the athletes healthy. Hiring of well-trained coaches and athletic trainers may play a role in decreasing the occurrence of injury during training. Proper institution of conditioning exercises, which include but are not limited to calisthenics, gentle passive stretching and proprioceptive exercises may decrease the occurrence of injury.

CONCLUSION

During the 69th UAAP season, the most common causes of injury among all the UST teams or sports monitored were mainly temperature related (hydration, cramps), muscle cramps and pain secondary to gastric problems. The knees were the most commonly involved body part across all sports. This was followed by the lower leg and ankle. The risk of injuries among team sports was considerably higher in basketball (1.43) compared to soccer (1) and volleyball (0.17). Among the individual sports, judo (2.3) and taekwondo (2.1) have higher injury risks compared to tennis (0.5), athletics (0.3) and swimming (0.17).

Injuries incurred during training may be prevented by incorporating proper conditioning exercises, which include but are not limited to stretching, calisthenics, and proprioceptive exercises. Coaches' recognition of the severity of injury, trainer assessment, proper use of emergency medical equipment and compliance with rehabilitation may minimize the long term detrimental effects of an injury.

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