

# PSYCHOLOGICAL IMPACT OF SPORTS INJURIES AMONG GHANAIAAN UNIVERSITY ATHLETES

## ABSTRACT

**Background:** Sports related injuries occur in the participation of sports due to many factors. Injuries have been reported to affect athletes psychologically.

**Aim:** The aim of the study is to determine the psychological impact of sports injuries among Ghanaian University Athletes.

**Methodology:** A convenient sampling method was used. The Bi-Polar Profile mood of states questionnaire used to quantify the mood states of injured athletes and the numerical rating scale was used to determine severity of the injuries. Inferential statistics of independent student *t* test, ANOVA and Spearman's correlation were implored in the data analysis.

**Results:** Two hundred and thirty (230) partook in this study of which 94 (58 males and 36 females) were injured. The mean age was  $21.8 \pm 2.3$  years. The mean years of sport participation was  $7.0 \pm 5.2$  years. There was a statistical significance difference in the mood of injured athletes ( $p < 0.05$ ). The mean of non- injured athletes ( $25.67 \pm 5.66$ ) was significantly higher than the injured athletes ( $22.20 \pm 6.73$ ) on the anxiety-composed scale. There was no statistically significant difference between mood and injured male and females ( $p < 0.05$ ).

**Conclusion:** The mood of injured athletes were more negatively affected than non-

injured athletes. However, the sex and the types of sports engaged in by the athletes had no significant influence on their mood presentation. Rehabilitation professionals including physiotherapists should consider highly the mood of athletes in their management goals irrespective of the sex and sports participation years with a view to make appropriate medical referral.

**Keywords:** Sports injury, Psychology, Collegiate athletes, Rehabilitation

### **Abbreviations**

SIRP's – Sports Injury Rehabilitation Professionals

NCAA – National Collegiate Athletic Association

Bi-POMS- Bipolar Profile of Mood State Questionnaire

### **INTRODUCTION**

There exist different school of thoughts with regards to the definition of what sports injury is. Olmedilla *et al*<sup>1</sup> defined sports injuries to be any bodily damage sustained during participation in sports. Whereas Sachs *et al*<sup>2</sup> referred to sports injuries as sports related injuries which cause players' inability to participate one day after injury and requiring medical attention. Sports related injuries have adverse effects on individuals to the extent that it sometimes jeopardizes one's career as it can have a negative toll on the psychological and emotional health.<sup>3</sup>

Sports Injuries have a wide spectrum which spans from minor injuries like bruises and grazes through moderate associated injuries like sprains and strains to more detrimental injuries such as fractures and even death in some rare cases.<sup>3</sup> One's participation in sports may be due to several reasons. Hill *et al*<sup>4</sup> further identified

psychological adjustments, externalizing behaviors, low levels of depression and positive relationship with peers as some of the beneficial effects individuals can derive in sports participation. In contrast to the above, the major detrimental effects in sports participation are sports related injuries which are mostly associated with socio-economic burden relating to the duration of the injury, nature of treatment, and loss of work/sporting time, disability and reduced quality of life<sup>3</sup> which may affect psychological status of the athletes irrespective of their level. Sports participation are extra-curricular activities in higher institutions through which selected athletes represent their schools in different competitions. Collegiate athletes are a group of individuals who partake in an organized competitive sport that is financed and sponsored by the institution which he/she finds himself/herself in.<sup>5</sup> Injury occurrence among these groups has been reported to be a potential stressor that have negative effects on their psychological and emotional health.<sup>6</sup> Sports related injuries can go a long way to render the athlete disabled which can have a huge psychological toll on the individual.<sup>7</sup>

Putukian<sup>6</sup> further established the fact that injury as a major stressor on sports related activities has both psychological and emotional effects in collegiate athletes. The author highlighted depression, substance use, participating anxiety, suicide, eating disorders and binge drinking as some of the negative effects of injuries on the psychological aspect of the athletes' health. For instance, depression as a psychological and emotional response to injury can hinder injury recovery rate.<sup>6</sup> Previous study revealed that 21% of participants reported high alcohol usage and problems associated with alcohol among 262 collegiate athletes. Also, it was

established that there was an association between self-reported symptoms of depression and alcohol abuse. Athletes with severe depression and psychological symptoms had a greater rate of alcohol abuse compared with those with low depression and psychological symptoms.<sup>8</sup> Several researchers have reported that the adherence rate to treatment protocols and recovery during the rehabilitative phase is influenced by the psychological challenges that most injured athletes face.<sup>9,10,11</sup>

Upon recognition of the relevance of providing psychological needs to individual injured athletes, The National Athletic Trainer's Association<sup>12</sup> published a document which meant to inform athletic trainers on how to help injured athletes psychologically. Stressing on these outlined strategic competences, athletic trainers should be able to identify clients exhibiting abnormal social, emotional and mental behaviors so as to implement psychosocial strategies, intervene -and refer to the appropriate professionals when necessary. The call for the use of psychosocial strategies has been well documented in literature with goal setting, positive self-statements, cognitive restructuring, relaxation strategies and mental imagery have been some of the useful strategies employed in aiding athletes cope with their psychological challenges.<sup>13</sup> Sports Injury Rehabilitation Professionals especially sports psychologists do not only provide strategies to help athletes when they are injured but also whilst they are in a good state to participate effectively in sports. These athletes are prepared psychologically and emotionally to be able to perform very well and produce better outcomes in their respective sporting disciplines.<sup>11,14</sup> There have been shortfalls in the type and amount of psychological intervention

that Sports Injury Rehabilitation Professionals (SIRPs) deliver directly. The rates of referral to SIRPs are relatively low. Clement D, et al<sup>15</sup> in their study found only 17% of SIRP's they surveyed, had ever referred an athlete who is injured to a sport psychologist. This is as result of perceived lack of access or lack of need for referral; both factors could be influenced by exposure to psychology for sport injury education. Additionally, Heaney C, et al<sup>16</sup> also highlighted the need for SIRPs to receive education on the benefits of referral and to further collaborate with sports psychologists. Physiotherapists are commonly involved in the management of sports injuries at all levels and with every sporting event. They employ various physical modalities such as ice, supportive devices, taping, graded exercises, education among others in a bid to remediate athlete's sports related injuries.<sup>17</sup> Although physiotherapy has been proven to be effective in alleviating symptoms that can arise from these injuries, the rate of re-occurrence is high due to the usual neglect on the other factors that might influence the treatment outcome such as motivation and emotional reaction to injury. This observation remains the source of motivation for the present study. Therefore, the purpose of this study is to determine the psychological impact that could be precipitated by sports injuries among Ghanaian university athletes so as to properly sensitize SIRPs including the physiotherapists to be responsive to the psychological sequel of the sports injuries so as to make necessary referral. Thus, specifically, this study sought to determine the effects of sports injuries on the mood of injured athletes, determine the difference in the moods of the injured male and female athletes following sports injuries, determine the difference in the mood of the athletes on the

basis of sports participation, and also determine the association between severity of injury and the mood of injured athletes.

## **MATERIAL AND METHODS**

The study was conducted at the University of Cape Coast Campus during the Ghana University Students Association games. Athletes of the various public universities who participated in football, basketball, long tennis, sprinting, table tennis, badminton & netball and were willing to be part of the study were involved. Cross sectional study design was adopted. Taro Yamene's formulae was used to calculate the sample size  $n = \frac{N}{1 + Ne^2}$ , where N= study population e= error of precision n= sample population N=1840 e= 0.05. Based on the above formula, 320 participants were recruited. For this study, University athletes who have sustained sports injuries in connection with the tournament, Non-injured University Athletes who will participate in the tournament, and University athletes who participated in football, basketball, netball, sprinting, badminton, long tennis, table tennis were included in the study while University Athletes who have sustained injuries other than sports injuries, Athletes who have psychological problems from sources other than sports injuries. E.g. Family issues, relationship issues, etc. were excluded from the study. Bipolar Profile of Mood states (POMS-Bi) Questionnaires is the instrument that was used. It is a generic instrument, and therefore it can also be used to quantify the mood patterns of individuals including high school athletes, college athletes and psychiatric patients. Coaches of the participating Universities were contacted to inform them of the research. The researcher met them in person during the

competition to establish meeting times in order to distribute copies of the questionnaire. The researcher and two researcher Assistants visited the athletes at their various hostels to administer questionnaires to the student athletes. The questionnaire was explained to the athletes before it was administered. Data were collected after completion of the questionnaires which lasted for 10 minutes. The collected data was entered into statistical package for social sciences (SPSS) version 23.0. Mean and standard deviation were used to summarize the data. Inferential statistics of independent Sample t test was used to determine the differences in the moods of the injured male and female athletes. Association between the severity and type of injury were analyzed using Spearman Correlation. The statistical significance was set at 0.05. In all, permission was sought from Ghana University Sports Association. Written and Informed Consent was sought from the subjects after the purpose and protocol of the study were explained to them. The participants were made aware of the option to withdraw from the study at any time without fear even though the cooperation to complete the study was sought.

## **RESULTS**

### **Response Rate**

Two hundred and thirty (230) injured and non-injured athletes took part in this study out of which 94 (40.9%) were injured and 136 (59.1%) were non-injured.

### **Demographics**

The age range of the athletes was 17 to 33 years (mean age = 21.8±2.3 years) of which 149 (64.8%) were males. The mean years of sport participation by the participants was 7.0±5.2 years. The results are presented in Table 1. Also, majority of the participants 110 (48.0%) engaged in soccer compared to 16 (6.9%) who partook in racket games as shown in (Figure 1). Additionally, 66 (70.2%), injured participants described their pain as sharp whiles, 20 (10.6%) described theirs as burning and dull aching as shown in the bar graph in (Figure 2).

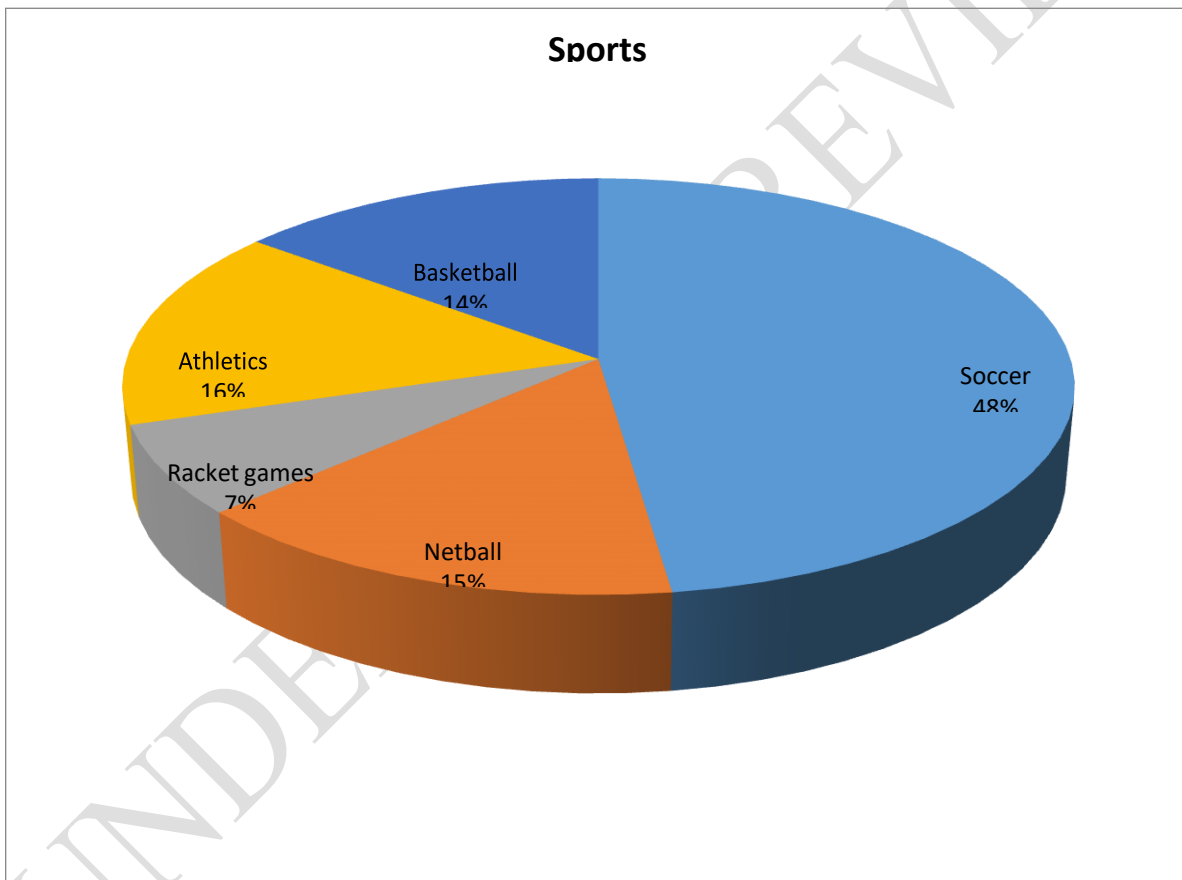
**Table 1:** Demographic characteristics of participants

	<b>Mean</b>	<b>Std. Dev.</b>
Age	21.8	2.3
Years of sport participation (yrs.)	7.0	5.2
	<b>Frequency</b>	<b>Percentage (%)</b>
<b>SEX</b>		
Male	149	64.8
Female	81	35.2
Total	230	100.0
<b>ATHLETE</b>		
Injured	94	40.9
Non-injured	136	59.1
Total	230	100.0

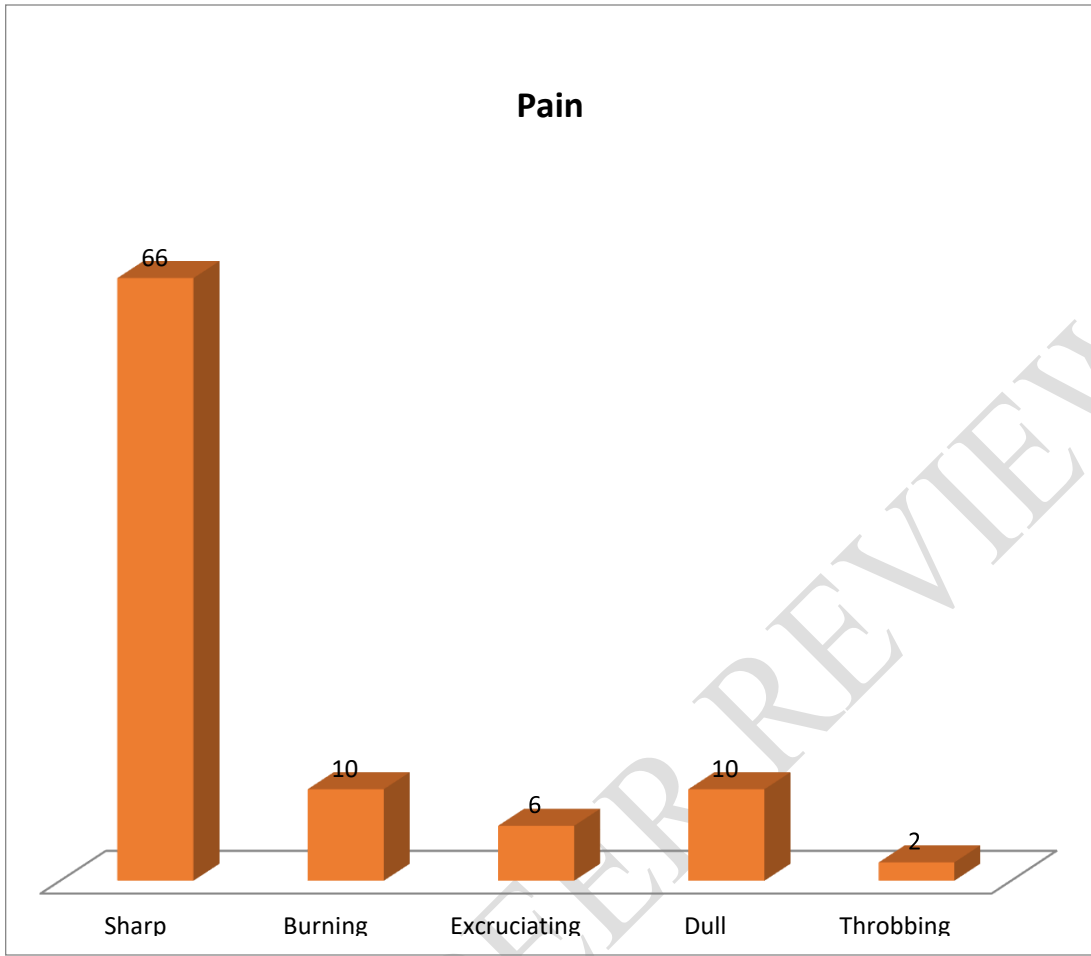
### DURATION OF INJURY

Acute	57	60.6
Sub- acute	21	22.3
Chronic	16	17.1
Total	94	100.0

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**Figure 1:** Type of Sports participants engaged in.

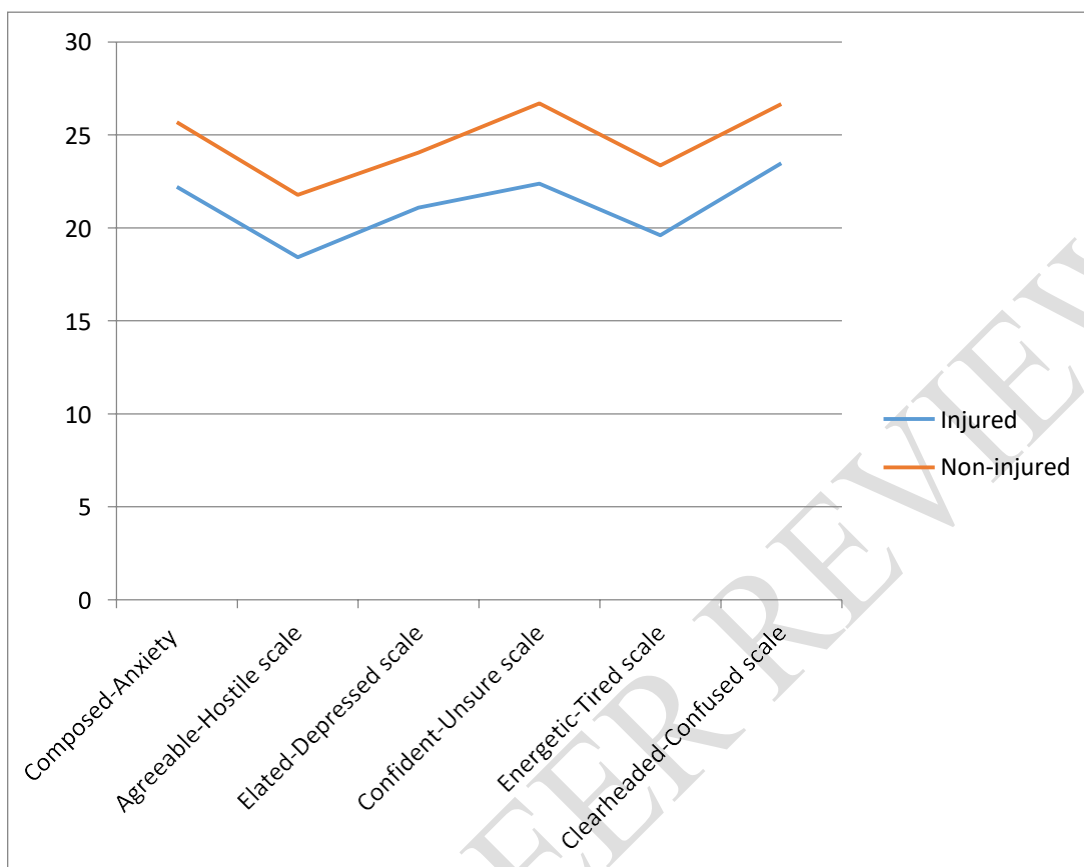


**Figure 2:** Participants' description of pain

**Table 2:** Unpaired t-test analysis for the comparison of mood of injured and non-injured athletes

<b>POM-BI SUBSCALE</b>	Mean± Std. Dev.	t	Sig.
<b>Composed-Anxiety</b>			
Injured	22.20±6.73	-4.211	<b>0.00*</b>
Non-injured	25.67±5.66		
<b>Agreeable-Hostile scale</b>			
Injured	18.40±5.61	-4.68	<b>0.00*</b>
Non-injured	21.77±5.19		
<b>Elated-Depressed scale</b>			
Injured	21.07±6.26	-3.39	<b>0.00*</b>
Non-injured	24.04±6.74		
<b>Confident-Unsure scale</b>			
Injured	22.36±6.73	-4.83	<b>0.00*</b>
Non-injured	26.68±6.63		
<b>Energetic-Tired scale</b>			
Injured	19.60±6.31	-4.34	<b>0.00*</b>
Non-injured	23.35±6.50		
<b>Clearheaded-Confused</b>			
Injured	23.47±5.63	-4.06	<b>0.00*</b>
Non-injured	26.65±5.99		

\*significant at  $p < 0.05$ , injured athletes  $n=94$ , non-injured  $n=136$



**Figure 3:** The comparison

### UNPAIRED T-TEST ANALYSIS FOR THE COMPARISON OF THE MOODS OF INJURED MALE AND FEMALE ATHLETES

The mood of injured male and female athletes were compared. The unpaired *t*-test showed nosignificant difference ( $p>0.05$ ) between male and female athletes except on the clearheaded- confused subscale where the mood of the males ( $24.60 \pm 5.15$ .) was significantly higher than ( $p=0.01$ ) the females mood ( $21.64 \pm 5.96$ ) as presented in Table 3.

## **COMPARISON OF THE MOODS OF ATHLETES ON THE BASIS OF SPORTPARTICIPATION**

The difference in the mood of athletes on the basis of sport participation as measured with POM-BI scale, was performed using One-way analysis of variance. There was no ( $p>0.05$ ) statistically significant difference in the mood (all POMS-BI subscale) of the athletes with regards to their sport participations.

The results are presented in Table 4.

## **THE RELATIONSHIP BETWEEN PAIN INTENSITY AND THE MOOD OF INJURED ATHLETES**

The pain intensity and mood of the injured athletes were performed using spearman's correlationcoefficient. There was no significant relationship ( $p>0.05$ ) between the pain intensity and the mood as measured by the POMS-BI scale as presented in Table 5.

**Table 3:** Unpaired sample t-test showing the differences in mood of injured male and female athletes.

Mood	Mean±std. Dev.	t	Sig.
<b>Composed-Anxiety</b>			
Male	23.03± 5.86	1.533	0.13
Female	20.86 ±7.84		
<b>Agreeable-Hostile</b>			
Male	18.29 ±5.55	-0.242	0.81
Female	18.58 ±5.79		
<b>Elated-Depressed</b>			
Male	21.68 ±6.47	1.211	0.23
Female	20.08 ±5.88		
<b>Confident-Unsure</b>			
Male	23.36 ±6.84	1.854	0.07
Female	20.75 ± 6.30		
<b>Energetic-Tired</b>			
Male	20.00±6.48	0.781	0.44
Female	18.94±6.06		
<b>Clearheaded- confused</b>			
Male	24.60 ± 5.15	2.550	<b>0.01*</b>
Female	21.64 ±5.96		

\*significant at  $p < 0.05$ , injured male athletes  $n=58$ , injured female athletes  $n=36$

**Table 4:** One-way analysis of variance of mood and type of sport

Mood and sports	N	F	p-value
Composed-Anxiety*sport	228	2.306	0.06
Agreeable-Hostile*sport	230	0.121	0.98
Elated-Depressed*sport	230	0.612	0.66
Confident-Unsure*sport	230	0.882	0.48
Energetic-Tired*sport	229	0.881	0.48
Clearheaded- confused*sport	230	1.342	0.26

**Table 5:** Spearman's correlation analysis mood and pain intensity

Variables	N	R	p
Composed-anxiety*pain	94	0.10	0.33
Agreeable-Hostile*pain	94	0.02	0.89
Elated-Depressed*pain	94	0.17	0.11
Confident-Unsure*pain	94	0.06	0.58
Energetic-Tired *pain	94	0.08	0.45
Clearheaded-confused *pain	94	0.07	0.49

*r=Spearman's correlation*

## EFFECTS OF SPORTS INJURY ON THE MOOD OF INJURED AND NON-INJURED ATHLETES

**H<sub>0</sub>:** There would be no significant effects of sports injuries on the mood of

injured and non-injured athletes.

**Test statistic:**

Unpaired t-

testSet p-

**value:**  $p < 0.05$

**Calculated p-**

**value:**

$p^{\wedge} = 0.00$

**Interpretation:** Since  $p^{\wedge} < p$ , the study rejects the null hypothesis

**Conclusion:** There were significant Effects of sports injuries on the mood of injured and non-injured athletes.

## **COMPARISON OF THE MOODS OF INJURED MALE AND FEMALE ATHLETES**

**H<sub>0</sub>:** There will be no significant difference on the moods of injured male and female athletes

**Test statistic:** Unpaired Sample t-test

**Set p-value:**  $p < 0.05$

**Calculated p-value:**  $p^{\wedge} = 0.01$

**Interpretation:** Since  $p^{\wedge} < p$ , the study rejected the null hypothesis

**Conclusion:** There were significant difference on the moods of injured male and female athletes.

## COMPARISON OF THE MOODS OF ATHLETES ON THE BASIS OF SPORT PARTICIPATION

**H<sub>0</sub>:** There would be no significant difference of mood on the basis of sport participation

**Test statistic:** ANOVA

**Set p-value:**  $p < 0.05$

**Calculated p-value:**  $p^{\wedge} = 0.98$

**Interpretation:** Since  $p^{\wedge} > p$ , the study failed to reject the null hypothesis

**Conclusion:** There was no significant difference in mood of the athletes on the basis of sport participation.

## RELATIONSHIP BETWEEN PAIN INTENSITY AND THE MOOD OF INJURED ATHLETES

**H<sub>0</sub>:** There would be no significant relationship between pain intensity and mood of injured athletes.

**Test statistic:** Spearman's correlation

**Set p-value:**  $p < 0.05$

**Calculated p-value:**  $p^{\wedge} = 0.49$

**Interpretation:** Since  $p^{\wedge} > p$ , the study failed to reject the null hypothesis

**Conclusion:** There was no significant relationship between pain intensity and mood of injured athletes.

## DISCUSSION

As individuals, we go through a lot of emotional changes depending on the kind of mood we find ourselves in. Mood can be negative or positive and it varies among individuals as a result of temperament and personality traits. There are several factors that account for altered mood changes in humans. Some of these are lack of sleep, nutrition, and lack in the sense of accomplishment among others. Moreover, narrowing it down to collegiate athletes, since they are the main focus of this study, they go through a lot of mood imbalances. This is because apart from them pursuing excellence in their various sporting disciplines they found themselves in, there are other aspects of their life that they are expected to excel in. Pressure from their lecturers, coaches, school administrators, peers, parents to excel alone can affect the psychological mood of these athletes because failure to achieve these targets or goals can make them depressed and to a large extent committing suicide if it becomes too much a burden for them to carry.<sup>18</sup> Not only do they go through psychological problems, but also make them prone to having injuries as they partake in their various sporting disciplines and this further affect their psychological health as they go through a lot of emotional disorders. Even though physiotherapy is the first point of call in the event of any injury sustained by these athletes, the concerns about their inherent emotional reaction to the injury is rarely considered. Clinical psychologists are part of the Sports Injury Rehabilitation Professionals whose mandate is to alleviate psychological problems among the athletes, their service is rarely utilized among the collegiate athletes owing to lack of referrals. This same concern necessitated the present study to determine the

psychological impact of sport injuries among Ghanaian University athletes.

### **DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS**

Two hundred and thirty Ghanaian University athletes partook in the study. One hundred and forty-nine (64.8%) were males and 81(35.2%) were females. This finding was sequel to the types of sporting disciplines during the event which were largely male centered. The events that were male centered and dominated are soccer, basketball and long tennis. On the contrary, a study by Ristolainen *et al*<sup>19</sup> had more females participating in their study more than males because of the sporting disciplines participated.

A total of ninety-four athletes were injured. Out of which 58 were males and 36 females. The higher number of injured male participants is not unconnected with more involvement of the male students in event. Naturally the energy and force with which the male sex exerts in their various sporting disciplines makes them more susceptible to injuries as compared to females. Sallis JF, *et al*<sup>20</sup> in their study had male sex having an increased injury rate than the female sex. This finding was substantiated by Yang J, *et al*<sup>21</sup> on the epidemiology of overuse and acute injuries among competitive collegiate athletes. The authors indicated that the male sex was more prone to injuries during competition than the female sex. Contrary to the above results, Elias<sup>22</sup> indicated that female soccer players had a higher incidence of injury than the male sex because of the differences with respect to the physiological, anatomical or biomechanical characteristics that are more common to female.

In this study, majority of the participants 110 (48.0%) engaged in soccer and the least in racket games was 16 (6.9%). This finding is consistent with reality in Ghana where soccer attracts more interest than any other sporting events.

Injured athletes had most of their injuries in the acute stage (60.6%). Acute injuries are caused by a single traumatic event.<sup>3</sup> It occurs suddenly and mostly associated with high-speed sporting disciplines such as soccer and other full body contact sports. The reason for the high incidence of acute injuries was due to stress athletes go through to attain success and also the intensity of training regimen coaches subject them through.

Majority of injured athletes who participated in the study described their pain to be sharp followed by burning, dull, excruciating with the least being throbbing. This is not surprising as these presentations characterize the features of most acute injuries.

### **MOOD OF INJURED ATHLETES AND NON-INJURED ATHLETES**

This present study shows that injured athlete as compared to non-injured athlete experienced more negative mood state as compared to non-injured athlete. The result obtained in this study could imply that student athletes at the collegiate level might be going through a lot of psychological problems that places much stress on them. Academic demands, competition among team mates to mention a few might make them go through psychological problems which in most cases may affect their abilities to cope.<sup>18</sup> Moreover, collegiate athlete having an injury in addition to psychological problems, he/she might be going through may bring about the injured athlete having negative mood disorders.<sup>6</sup>

Johnston and Carroll<sup>23</sup> also investigated the mood changes on ninety–three injured participants and concluded that injured athletes had their moods negatively affected. This was in conformity to the current study. Similar to a study conducted by Damien C, *et al*<sup>24</sup> on the psychosocial aspects of athletic injuries as perceived by athletic trainers, concluded that injured athletes’ experiences psychological responses due to their injuries. Tripp DA, *et al*<sup>25</sup> corroborated all the above findings including the present study.

### **COMPARISON OF THE MOODS OF INJURED MALE AND FEMALE ATHLETES**

This study showed injured male and female athletes did not show any significant difference on all the subscales of Bi-POMS with the exception for clearheaded-confused subscale where males had a higher score than females. Similarly, Galambos SA, *et al*<sup>26</sup> found that among injured male and female athletes in Australia, there was no significant difference. It thus implies that, the sex of the students does not largely have significant influence on the injuries and its clinical presentation. Indeed, female individuals are known to be emotionally weaker than their male counterpart that might have accounted for the difference in the clearheaded-confused subscale of Bi-POMS.

Understanding the differences with regards to both sexes is important in order to be able to tailor appropriately and adopt a more optimistic approach during their recovery and rehabilitation process. A study conducted among competitive male and female athletes by Appaneal RN, *et al*<sup>27</sup> showed that injured female athletes experienced greater depression mood states than injured collegiate male athletes. He highlighted that females tend to express more verbal emotion than the males.

Another study by Cartoni AC, et al<sup>28</sup> also reported that male and female athletes having varying mood changes in their injured state which is contrary to the findings of this current study. They further established that injured male athletes experienced a lower anxiety level than females.

### **COMPARISON OF THE MOODS OF ATHLETES ON THE BASIS OF SPORT PARTICIPATION**

The findings from this study indicated that there was no statistical significance difference on the mood of injured and non-injured athletes on the basis of sport participation. This implies that athletes have similar reaction to injury occurrence regardless of the sports the individual athletes is involved in. The mechanism of injury is how the injury occurs and according to literature, two mechanisms exist with which it happens i.e. overuse and acute injuries.<sup>3</sup> A study by Smoljanovic T, et al<sup>29</sup> opined that Overuse injuries presents with adverse effects some of which are loss of playing time, reduced function, psychological exhaustion and pain. This later affect the mood state of athletes since it develops at a slower rate and are associated with repetitive micro-trauma to the musculoskeletal system.<sup>30</sup> Repeated running activities and more rigorous training regimen is associated with overuse injuries and literature suggest that different sports have diversified mechanisms of injury as a result of movement demands and unique playing styles. Acute injuries usually occur without any signs of warning. It is associated with single, macro- traumatic event. They usually occur as a result of an application of an external force which results in tissue disruption. Ligament sprains and fractures can be cited as examples of acute injuries.<sup>3</sup>

### **THE RELATIONSHIP BETWEEN PAIN INTENSITY AND THE MOOD OF**

## **INJURED ATHLETES**

The findings from this study indicated that there was no significant relationship between pain intensity and the mood. This means that increase in pain intensity does not have any impact on the mood of the injured athletes. It also implies that pain may not be the only factor that could change the mood state of injured athletes. This is contrary to a study by Klenk<sup>31</sup> which established a link between pain intensity and the mood of injured athletes. It was further reported that the least seriously injured athletes showed less changes with regards to their mood and vice versa.

## **CONCLUSION**

The mood of injured and non-injured athletes showed that injured athletes were more negatively affected than non-injured athletes. However, the sex and the type of sports engaged in by the athletes have no significant influence on their mood presentation. It thus implies that rehabilitation team including the physiotherapists should consider the mood of the athletes a significant factor in their management goal irrespective of the sex of the athletes and their sports participation with a view to make appropriate referral.

## **CONSENT**

All authors declare that 'written informed consent was obtained from the athletes for publication of this research and accompanying images. A copy of the written consent is available for review by the Editorial office/Chief Editor/Editorial Board members of this journal.

## **ETHICAL APPROVAL**

All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

## **REFERENCES**

- [1] Olmedilla A, Ortega E and Gómez JM. Influencia de la lesión deportiva en los cambios del estado de ánimo y de la ansiedad precompetitiva en futbolistas. Cuadernos de Psicología del Deporte. 2014;74(1): 9-10.
- [2] Sachs ML, Sitler MR, Schwille G. Psychological bases of sports injuries. 2007;171-172
- [3] Dennis R and Finch C. Sports Injuries. International Encyclopedia of Public Health. 2008;206- 208.
- [4] Hill T, Claypool T, Kowalski K, Kinzel A. 'It's more than a game': Young women's experiences with physical activity as a means for resilience throughout adolescence. Education Matters: The Journal of Teaching and Learning. 2014;2(2):84–107.
- [5] Gerdy RJ. Sports in School the Future of an Institution. Teachers College Press; 2000.
- [6] Putukian Margot. The Psychological response of injury in student athletes:

a narrative review with a focus on mental health. *Br J Sports Med.* 2015; 50:145-148.

[7] Finch C and Cassell E. The public health impact of injury during sport and active recreation. *Journal of Science & Medicine in Sport.* 2006;9 (6): 490–497.

[8] Miller BE, Miller MN, Verhegge R, Linville HH, Pumariega AJ. Alcohol misuse among college athletes: self-medication for psychiatric symptoms? *J Drug Educ.* 2002; 32:41–52.

[9] Hemmings B, Povey L. Views of chartered physiotherapists on the psychological content of their practice: a preliminary study in the United Kingdom. *Br J Sports Med.* 2002;36(1):61-64.

[10] Arvinen BM, Hemmings B, Weigand D, Becker C, Booth L. Views of chartered Physiotherapists on the psychological content of their practice: a national follow-up survey in the United Kingdom. *J Sport Rehabil.* 2007;16(2):111-121.

[11] Laffarty ME, Kenyon R, Wright CJ. Club based and non-club-based physiotherapists views on the psychological content of their practice when treating sports injuries. *Res Sports Med,* 2008;16(4): 295-306.

[12] National Athletic Trainers Association. *Athletic Training Educational Competencies.* 5th ed. Dallas TX:National Athletic Trainers' Association; 2011.

[13] Beneka A, Malliou P, Bebetos E, Gioftsidou A, Pafis G, Godolias G. Appropriate counselling techniques for specific components of the rehabilitation plan: a review of the literature. *Phys Train.* 2007;8:3-14.

[14] Kamphoff J, Thomae J, Hamson-Utley JJ. Integrating the psychological and

physiological aspects of sport injury rehabilitation: Rehabilitation profiling and phases of rehabilitation. *The psychology of sport injury and rehabilitation*. 2013;134-155.

[15] Clement D, Granquist MD, Arvinen-Barrow MM. Psychosocial aspects athletic injuries as perceived by athletic trainers. *Journal of Athletic Training*. 2013;48, 512e521.

[16] Heaney C, Walker NC, Green AJK, Rostron CL. Sport psychology education for sport injury rehabilitation professionals: A systematic review. *Physical Therapy in Sport*. 2015;16:72-79.

[17] Lake DA, Wofford NH. Effect of Therapeutic Modalities of Patients with Patellofemoral Pain. *Sport Health*. 2011;3(2): 182-189.

[18] Kissinger, Daniel, B., Ed.; Miller, Michael, T., Ed. (2009): *College Student-Athletes: Challenges, Opportunities, and Policy Implications*. *Educational Policy in the 21st Century:*

*Opportunities, Challenges and Solution*.

[19]Ristolainen L, Heinonen A, Kettunen JA. Gender differences in sport injury risk and types of injuries: a retrospective twelve- month study on cross country skiers, swimmers, long –distance runners and soccer players. *Journal of Sports Science & Medicine*. 2009;8(3):443-451.

[20] Sallis JF, Booth, SL, Ritenbaugh C. Environmental and societal factors affect food

choice and physical activity; rationale ,influences and leverage points. *Nutr Rev*.

2001; 59(3):57-65

[21] Yang J, Tibbetts, AS, Heiden E. Epidemiology of overuse and acute injuries among competitive collegiate athletes. *Journal of Athletic Training*. 2012; 47(2): 198-207.

[22] Elias SR. 10-year trend in USA Cup Soccer injuries:1988-1997. *Medicine & Science in Sports & Exercise*. 2001;33, 359-367.

[23]Johnston LH & Carroll D. The psychological impact of injury: effects of prior sport and exercise involvement. *Br J Sports Med*. 2000; 34:436-439.

[24] Damien C, Megan DG, Monna MAB. Psychosocial Aspects of Athletics Injuries as Perceived by Athletic Trainers. *Journal of Athletic Training*, 2013;48(4): 512-521

[25] Tripp DA, Ebel-Lam A, Stanish WD. Psychological effect of injury on the athlete. *JACM*. 2006;12(1): 23-30.

[26]Galambos SA, Terry PC, Moyle GM, Locke SA. Psychological predictors of injury among elite athletes. 2005;39(6).

[27]Appaneal RN, Levine BR, Perna FM, Roh JL. Measuring post -injury depression among male and female competitive athletes. *Journal Sport Exerc Psychol*. 2009; 31(1):60-76.

[28]Cartoni AC, Minganti C, Zelli A. Gender, age and professional-level differences in the psychological correlates o fear of injury in Italian gymnasts. *Journal of Sport Behavior*. 2005; 28:3-17

[29]Smoljanovic T, Bojanic I, Hannafin JA, Hren D, Delimar D, Pecina M. Traumatic and overuse injuries among international elite junior rowers. Am J Sports Med. 2009; 37(6):1193.

[30] Fuller CW, Ekstrand J, Junge A, Andersen TE, Bahr R, Dvorak J, Hagglund M, McCrory P, Meeuwisse WH. Consensus statement on injury definitions and data collection procedures in studies of football (soccer) injuries. Clin J Sport Med. 2006; 16(2):97–106

[31]Klenk CA. Psychological response to injury, recovery and social support: A survey of athletes at an NCAA Division 1 University. Senior Honors Projects, Paper 9. 2006.