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# **Is there a correlation between coaches' leadership styles and injuries in elite football teams? A study of 36 elite teams in 17 countries**

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## **ABSTRACT**

**Background:** Do coaches' leadership styles affect injury rates and the availability of players in professional football? Certain types of leadership behaviour may cause stress and have a negative impact on players' health and well-being.

**Aim:** To investigate the transformational leadership styles of head coaches in elite men's football, and to evaluate the correlation between leadership styles, injury rates and players' availability.

**Methods:** Medical staff from 36 elite football clubs in 17 European countries produced 77 reports at four post-season meetings with a view to assessing their perception of the type of leadership exhibited by the head coaches of their respective teams using the Global Transformational Leadership scale. At the same time, they also recorded details of individual players' exposure to football and time-loss injuries.

**Results:** There was a negative correlation between the overall level of transformational leadership and the incidence of severe injuries ( $\rho = -0.248$ ;  $n = 77$ ;  $p = 0.030$ ), with high levels of transformational leadership being associated with smaller numbers of severe injuries. However, Global Transformational Leadership only explained 6% of all variation in the incidence of severe injuries ( $r^2 = 0.062$ ). The incidence of severe injuries was lower at clubs where coaches communicated a clear and positive vision, supported staff members and gave them encouragement and recognition. Players' attendance rates at training were higher in teams where coaches gave encouragement and recognition to staff members, encouraged innovative thinking, fostered trust and cooperation, and acted as role models.

**Conclusions:** There is a link between injury rates and players' availability and the leadership style of the head coach.

## INTRODUCTION

Match, training and muscle injury rates in elite men's football have remained largely unchanged overall since 2000.<sup>1,2</sup> This would suggest that preventive strategies targeting player-related risk factors are not, on their own, sufficient to significantly reduce injury rates at elite level.<sup>3</sup> Accordingly, alternative risk factors need to be investigated in order to determine whether there is a correlation with injury rates and allow the most appropriate preventive measures to be adopted.<sup>3</sup>

When the chief medical officers of the clubs participating in the UEFA Elite Club Injury Study<sup>1</sup> were asked for their views on the most important risk factors contributing to injuries, the four most common factors listed were: (i) the workload imposed on players, (ii) players' well-being, (iii) the quality of internal communication and (iv) the head coach's leadership style.<sup>1,3-5</sup>

Leadership involves influencing others with a view to achieving a common goal and facilitating circumstances and environments that will help to reach that goal.<sup>6,7</sup> There are various ways of characterising leadership, one of which is to look at it in terms of three major leadership styles: transformational (democratic/participative), transactional (authoritarian/directive) and laissez-faire.<sup>8</sup> Transformational leadership involves motivating and inspiring followers to go beyond their self-interest for the benefit of collective interests by providing vision, meaning, challenges and stimulation.<sup>8</sup> Transactional leadership is based on rewarding and disciplining followers on the basis of their achievements or failures, while laissez-faire leadership is, in essence, an absence of leadership.<sup>8</sup>

Research in the area of sports psychology indicates that transformational leadership on the part of coaches is associated with higher levels of motivation and performance,<sup>9-12</sup> improved development and skill gains,<sup>13</sup> increased well-being,<sup>14</sup> increased satisfaction,<sup>10,11,15,16</sup> reduced aggression,<sup>17</sup> increased task/team cohesion<sup>10,18-20</sup> and increased willingness to make personal

sacrifices for the good of the team.<sup>19</sup> However, no study has yet investigated the correlation between leadership styles and physical injuries. A coach's leadership style could cause an increase in stress levels and reduce a player's ability to cope,<sup>21,22</sup> and we know that stress, in turn, is linked to the risk of injury.<sup>23-26</sup>

The aim of this study is to investigate the transformational leadership of coaches of elite football teams and evaluate the correlation between their leadership styles and injury rates and the availability of players for training and matches.

Our hypotheses are that transformational leadership is negatively correlated with injury rates and positively correlated with the availability of players for training and matches, and that certain elements of transformational leadership are more important than others in this regard.

## **MATERIAL AND METHODS**

This sub-study of the ongoing Elite Club Injury Study followed 36 elite football teams from 17 European countries from 2012 to 2016. At each of the study's post-season meetings, the clubs' chief medical officers assessed the leadership styles of their head coaches. A total of 77 reports were produced at those meetings. Data on injuries and exposure to football was also collected from the 36 teams for each of the four seasons.

The number of reports collected per club during the four-year study period ranged from one to four, with a median of two.

### **Data collection**

#### *Outcome measures/dependent variables: injury data*

Data on injuries was collected in accordance with the consensus statement on injury definitions and data collection procedures in studies of football (soccer) injuries,<sup>27</sup> and the general methodology was identical to that employed by Hägglund *et al.* (2005).<sup>28</sup>

An injury was defined as any physical complaint suffered by a player that resulted from a football match or a training session and led to that player being unable to participate fully in a future training session or match (i.e. a time-loss injury). Players were regarded as injured until such time as the club's medical staff allowed full participation in training and made the player available for selection for matches. A severe injury was defined as an injury causing an absence from training or matches lasting more than 28 days. Baseline data on players was collected when players were first included in the study, as was players' consent to participate in the study. A member of the club's medical staff recorded individual players' exposure to football (in minutes) for all training sessions and matches. Injury and attendance reports were sent to the study group once a month. Reports were checked by the study group on receipt, with prompt feedback sent to the clubs in order to correct any missing or unclear data. Each

injury was coded in accordance with a modified version of Orchard Sports Injury Classification System 2.0.9.

The risk of players being injured over a season was evaluated for each team on the basis of four criteria that have previously been found to be correlated with team performance.<sup>29</sup>

- i. Injury burden: (total number of days of absence/total number of hours of exposure) x 1,000. This variable accounts for the incidence and severity of injuries in a season.
- ii. Incidence of severe injuries: (total number of injuries causing absences of more than 28 days/total number of hours of exposure) x 1,000
- iii. Attendance at training: average attendance rate at training over a season, expressed as a percentage
- iv. Availability for matches: average availability for matches over a season, expressed as a percentage

*Independent variable: coaches' leadership styles*

The Global Transformational Leadership (GTL) scale was used by medical staff to assess their coaches' leadership styles. The GTL scale is a reliable and appropriate tool for assessing transformational leadership.<sup>30</sup> Team doctors were asked seven questions relating to their perception of the transformational leadership behaviours of their club's head coach. A five-point Likert scale ranging from 'rarely or never' (1) to 'very frequently, if not always' (5) was

used as a response format. Higher numbers denoted a more transformational leadership style. The seven scores were then combined to establish a mean score for each coach.

### **Statistical analysis**

Spearman's rank correlation coefficient ( $\rho$ ) was used to assess the relationship between GTL scores and the four outcome measures – i.e. (i) injury burden, (ii) incidence of severe injuries, (iii) attendance at training and (iv) availability for matches. The scores for the seven GTL questions were combined to produce an overall score, and teams were placed in three groups depending on whether their coach was considered to display low (1–2), moderate (3) or high (4–5) levels of transformational leadership. Differences between the low, moderate and high groups in terms of the four outcome measures were analysed using Kruskal-Wallis (KW) tests. If the results of the KW tests were statistically significant, comparisons of individual groups (low versus moderate, low versus high and moderate versus high) were carried out using Mann-Whitney tests.

In addition, effect sizes ( $r$ ) were calculated using the results of the Mann-Whitney tests, whereby 0.1 was classified as a small effect, 0.3 was regarded as a medium-sized effect, and 0.5 was classified as a large effect, as suggested by Cohen (1988).<sup>31</sup> All analyses were two-sided and the significance level was set at  $p < 0.05$ . Bonferroni correction was used for the comparison of individual groups, with the significance level set at  $p < 0.0167$ . IBM SPSS Statistics for Windows Version 23.0 was used for all analysis.

## RESULTS

There was a negative correlation between the overall GTL score and the incidence of severe injuries ( $\rho = -0.248$ ;  $n = 77$ ;  $p = 0.030$ ), with high levels of transformational leadership being associated with smaller numbers of severe injuries. However, the coefficient of determination ( $r^2 = 0.062$ ) shows that the GTL score explained only 6% of total variation in the incidence of severe injuries. There was no significant correlation between the GTL score and the injury burden, attendance at training or availability for matches.

### **Correlation between individual behaviours and injury rates and players' availability**

#### *1. Vision (coach communicates a clear and positive vision of the future)*

As Table 1 shows, there was significant variation in the incidence of severe injuries across the high, moderate and low groups for this aspect of leadership. The incidence of severe injuries was lower for the group that was rated high in terms of visionary leadership relative to the group that was rated low ( $p = 0.005$ ;  $r = 0.37$ ).

*Table 1 around here*

#### *2. Staff development (coach treats staff as individuals, supporting and encouraging their development)*

There was significant variation in the incidence of severe injuries and attendance at training across the high, moderate and low groups for this aspect of leadership (see Table 2). The high group had a lower incidence of severe injuries and higher attendance at training relative to the low group, with medium-sized effects for both variables (0.33 and 0.36 respectively). There was also a difference between the low group and the moderate group, with the low group having a significantly higher incidence of severe injuries (with a median value of 1.5 per 1,000 hours, compared with 1.0 for the moderate group;  $p = 0.003$ ;  $r = 0.39$ ), as well as lower attendance at training (with a median value of 81.1%, compared with 85.3% for the moderate group;  $p = 0.011$ ;  $r = 0.33$ ).

*Table 2 around here*

3. *Supportive leadership (coach gives encouragement and recognition to staff)*

There was significant variation in the incidence of severe injuries and attendance at training across the high, moderate and low groups for this aspect of leadership (see Table 3). The high group had a lower incidence of severe injuries and higher attendance at training relative to the low group, with medium-sized effects for both variables (0.33 and 0.36 respectively). There was also a significant difference between the low group and the moderate group, with the low group having a higher incidence of severe injuries and lower attendance at training (with those effects totalling 0.31 and 0.28 respectively).

*Table 3 around here*

4. *Empowerment (coach fosters trust, involvement and cooperation among team members)*

There was significant variation in attendance at training across the three groups for this aspect of leadership (see Table 4). The high group had a higher attendance rate than the low group (with a median value of 85.1%, compared with 81.5% for the low group;  $p = 0.011$ ;  $r = 0.35$ ), with a medium-sized effect.

*Table 4 around here*

5. *Innovative or lateral thinking (coach encourages people to think about problems in new ways and question assumptions)*

There was significant variation in attendance at training across the three groups for this aspect of leadership (see Table 5). The high group had a higher attendance rate than the low group (with a median value of 85.3%, compared with 81.3% for the low group;  $p = 0.011$ ;  $r = 0.32$ ), with a medium-sized effect.

*Table 5 around here*

6. *Leading by example (coach is clear about his values and practises what he preaches)*

There was significant variation in attendance at training and availability for matches across the three groups for this aspect of leadership (see Table 6). The low group had significantly lower attendance at training than the moderate group (with a median value of 81.4%, compared with 86.7% for the moderate group;  $p = 0.006$ ;  $r = 0.36$ ), as well as lower availability for matches (with a median value of 85.4%, compared with 90.7% for the moderate group;  $p = 0.027$ ;  $r = 0.30$ ).

*Table 6 around here*

*7. Charismatic leadership (coach instils pride and respect in others and inspires players by being highly competent)*

There were no significant differences between the various groups in terms of injury rates or players' availability for this aspect of leadership. There were 39 observations in the high group, 20 in the moderate group and 18 in the low group.

## DISCUSSION

Our study's main finding was that clubs where coaches used a transformational or democratic leadership style had significantly lower incidence of severe injuries. However, this correlation was weak, with GTL scores explaining just 6% of total variation in the incidence of severe injuries.

### *Articulating a positive vision of the future reduces the risk of severe injuries*

We found that leadership behaviours that communicated a clear and positive vision of the future appeared to reduce the risk of severe injuries.

This is in line with the idea that transformational leaders develop an image of the future of their organisation and communicate that vision to their subordinates.<sup>30</sup> Identifying new opportunities for the team and providing guidance regarding the future could increase players' expectations and intrinsic motivation and result in extra effort.<sup>32</sup>

### *Staff development is important in order to avoid severe injuries and increase attendance at training*

In our study, a leadership style that treated staff as individuals and supported and encouraged their development was associated with a 4% increase in attendance rates at training and a 33% decline in the incidence of severe injuries (comparing low levels of transformational leadership with moderate or high levels).

### *Supportive leadership has a positive impact*

A supportive leadership style, whereby the coach gives encouragement and recognition to staff, appears to reduce the incidence of severe injuries and increase attendance rates at training sessions. In our study, a leadership style involving low levels of support was associated with a 23% increase in the incidence of severe injuries and a 4% decline in attendance at training relative to a leadership style involving moderate levels of support.

This finding is in line with research indicating that supportive behaviour by coaches is associated with collective efficacy.<sup>6</sup> Supportive leadership is not just important for individual players; it is important for the team as a whole.<sup>30</sup>

### *Fostering trust and cooperation increases attendance rates at training*

The results of our study indicate that coaches who trust their staff and support cooperation between staff members are more likely to have higher attendance rates at training.

### *Innovative thinking could increase attendance at training*

A leadership style that encourages people to think about problems in new ways and question assumptions seems to increase attendance at training. Coaches with this leadership style encourage players to challenge inflexible thinking and patterns of behaviour in search of improvement and excellence.<sup>32</sup> They are also willing to take risks in order to achieve their goals and accept that mistakes can be an opportunity to learn.<sup>30</sup>

### *Leading by example appears to increase availability*

In this study, low levels of clarity about a coach's values were associated with a 5% decline in players' availability for training and matches relative to moderate levels of clarity. This highlights the coach's function as a role model that players can use as a source of guidance.<sup>32</sup>

### *Charisma has no impact on injury rates or players' availability*

It has been suggested in the past that charismatic leadership should be a good predictor of a leader's effectiveness and the performance of a business unit.<sup>30</sup>

However, in this study, there was no correlation between charismatic leadership and injury rates or players' availability. In fact, in a recent study on handball, Bormann *et al.* (2016) even found that it had a negative effect on teams' performance.<sup>32</sup>

Overall, our findings suggest that, in order to reduce the incidence of severe injuries and increase attendance at training, coaches should establish an interpersonal environment characterised by support, respect, trust and appreciation of staff and players.<sup>6</sup>

## **Theoretical framework**

This is a prospective epidemiological study revealing significant associations. Causative factors cannot be evaluated using this study design. We can, however, speculate as to whether a coach's democratic leadership style reduces stress on players and staff.<sup>26</sup>

Previous studies have shown that psychosocial stressors could increase the risk of injury.<sup>23,25,26,33–35</sup>

The mechanism underlying a stress-induced injury is thought to be a physiological arousal that increases muscle tension and reduces motor coordination.<sup>26</sup> It has also been reported that the relationship between stress and injury could stem from a decline in concentration, resulting in a reduced ability to focus.<sup>36</sup>

It has also been found that a performance-oriented climate is linked to increases in injury risk, as this kind of environment could promote intra-team rivalry, forcing players to risk injury.<sup>35</sup> Thus, a coach's leadership style may have an impact on players' stress levels and injury risk as a result of the demands placed on players, the availability of resources in order to handle demands, or the general atmosphere within the team. Transformational leadership, which specifically uses visionary, motivational and supportive leadership behaviours to unite the team,<sup>8</sup> appears highly relevant when investigating the impact of psychosocial factors on injuries. Coaches may inadvertently expose players to injury risk because their leadership fails to produce an optimally functioning team.

In a recent study of psychological factors and overuse injuries in track and field athletes, Timpka *et al.* (2015)<sup>37</sup> concluded that what appeared to matter in the causation of overuse injuries was not the athletic load per se, but rather the load applied in situations when the athlete's body was in need of rest. Since coaches are responsible for footballers' load and the balance between load and rest, it would be worth carrying out a similar study looking at football.

## **Methodological considerations**

The strength of this study lies in its substantial dataset, which was obtained from a homogeneous group of male professional footballers. The Elite Club Injury Study is an appropriate, reliable and useful tool for evaluating injury risk and injury patterns in elite male footballers.<sup>28</sup>

This study does, however, have a number of limitations. First of all, this study explored the opinions of medical staff regarding their head coach's leadership. Their opinions are subjective and not necessarily representative of the views of other team members. That being said, doctors at this level work with their teams on a full-time basis and see the coaches and players every day. As a result of their medical training, they are, in our opinion, in the best position to observe and evaluate how different coaches act and cooperate in terms of their

leadership styles. It could be argued that elite players are less able to provide an objective evaluation of coaches' behaviour, since they often look at their situation in the group and their relationship with the coach in a subjective manner. Moreover, they usually stay at clubs for shorter periods of time, so team doctors are in a better position to provide evaluations over time.

Second, the opinions of those medical staff could be influenced by their relationships with the head coach or by the team's results during the season. It would be interesting to look at whether prolonged exposure to the unique environment found in a football club makes certain behaviours more acceptable to individuals that work within it. A club's culture could potentially affect its doctors' perception and interpretation of the various transformational leadership categories or their ability or willingness to report objectively on the head coach's leadership.

Third, since the evaluation was carried out after the end of each season, there is potential for bias in the fact that doctors at clubs with high injury rates could, as a result of those injuries, take the view that their coach has a poor leadership style.

Fourth, although the collection of data on injuries and players' availability was prospective, the data on leadership styles was only collected once a season, making it more of a cross-sectional study. Cross-sectional studies do not capture dynamic aspects, as relationships and behaviour can change over the course of a season, and the relationships that are found may not necessarily be causative.<sup>6</sup> Also, leadership styles could change in line with results and perceived pressure on the head coach, and this kind of change has the potential to undermine players' trust and confidence.

Fifth, this study only covered elite men's football, so the findings should not be applied to other areas of football, such as amateur, youth and women's football (or, indeed, other sports).

A further limitation stems from the fact that this study only investigated transformational leadership. The correlation between injuries and other leadership styles (such as transactional leadership or laissez-faire leadership) has not yet been evaluated. Although transformational or democratic leadership has been found to be the most beneficial option in many types of organisation,<sup>8</sup> transactional or authoritarian leadership could be more appropriate or effective in some cases.

## **New findings**

- There is a correlation between a head coach's leadership style and the incidence of severe injuries and players' availability.
- Coaches who tend to employ a transformational or democratic leadership style have a significantly lower incidence of severe injuries in their teams. However, the correlation between the two only explains 6% of total variation in the incidence of severe injuries.
- The incidence of severe injuries is 29–40% lower in teams where coaches communicate a clear and positive vision of the future, support staff members and give staff encouragement and recognition.
- Attendance at training is higher in teams where coaches give encouragement and recognition to staff members, encourage innovative thinking, foster trust and cooperation among team members, and act as role models.

## **ACKNOWLEDGEMENTS**

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## **CONTRIBUTORSHIP STATEMENT**

Jan Ekstrand and Daniel Lundqvist were responsible for the conception and design of the study. Jan Ekstrand, Marc Vouillamoz and Niki Papadimitrou were involved in the collection of data over the study period. Jan Ekstrand conducted the analysis, together with biostatistician Henrik Magnusson. All authors contributed to the interpretation of the findings. Jan Ekstrand wrote the first draft of the paper, which was critically revised by Daniel Lundqvist, Marc Vouillamoz, Niki Papadimitrou, Lars Lagerbäck and Jon Karlsson. The final manuscript was approved by all authors. Jan Ekstrand is the study guarantor.

## **FUNDING**

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## **ETHICS**

The design of this study was approved by the UEFA Medical Committee.

## **PROVENANCE AND PEER REVIEW**

Not commissioned; reviewed externally.

## TABLE LEGENDS

- Table 1** Vision: KW tests for injury burden, incidence of severe injuries, attendance at training and availability for matches across low, moderate and high groups.
- Table 2** Staff development: KW tests for injury burden, incidence of severe injuries, attendance at training and availability for matches across low, moderate and high groups.
- Table 3** Supportive leadership: KW tests for injury burden, incidence of severe injuries, attendance at training and availability for matches across low, moderate and high groups.
- Table 4** Empowerment: KW tests for injury burden, incidence of severe injuries, attendance at training and availability for matches across low, moderate and high groups.
- Table 5** Innovative or lateral thinking: KW tests for injury burden, incidence of severe injuries, attendance at training and availability for matches across low, moderate and high groups.
- Table 6** Leading by example: KW tests for injury burden, incidence of severe injuries, attendance at training and availability for matches across low, moderate and high groups.

**Table 1.** Vision: KW tests for injury burden, incidence of severe injuries, attendance at training and availability for matches across low, moderate and high groups

	<b>Low (n = 16)</b>	<b>Moderate (n = 20)</b>	<b>High (n = 41)</b>	
	Median	Median	Median	P-value
Injury burden*	147.9	99.5	108.1	0.091
Incidence of severe injuries <sup>§</sup>	1.4	1.0	1.0	0.020
Attendance at training (%)	81.6	85.2	84.0	0.143
Availability for matches (%)	86.8	87.7	87.5	0.261

\* Number of severe injuries (causing more than 28 days of absence from training and matches) per 1,000 hours of exposure ( $(\sum \text{severe injuries} / \sum \text{hours of exposure}) \times 1,000$ )

<sup>§</sup> Number of days of absence per 1,000 hours of exposure ( $(\sum \text{days of absence} / \sum \text{hours of exposure}) \times 1,000$ )

**Table 2.** Staff development: KW tests for injury burden, incidence of severe injuries, attendance at training and availability for matches across low, moderate and high groups

	<b>Low (n = 16)</b>	<b>Moderate (n = 24)</b>	<b>High (n = 37)</b>	
	Median	Median	Median	P-value
Injury burden*	148.8	101.7	114.5	0.125
Incidence of severe injuries <sup>§</sup>	1.5	1.0	0.9	0.008
Attendance at training (%)	81.1	85.3	82.8	0.048
Availability for matches (%)	86.0	89.2	87.0	0.114

\* Number of severe injuries (causing more than 28 days of absence from training and matches) per 1,000 hours of exposure ( $(\sum \text{severe injuries} / \sum \text{hours of exposure}) \times 1,000$ )

<sup>§</sup> Number of days of absence per 1,000 hours of exposure ( $(\sum \text{days of absence} / \sum \text{hours of exposure}) \times 1,000$ )

**Table 3.** Supportive leadership: KW tests for injury burden, incidence of severe injuries, attendance at training and availability for matches across low, moderate and high groups

	<b>Low (n = 20)</b>	<b>Moderate (n = 23)</b>	<b>High (n = 34)</b>	
	Median	Median	Median	P-value
Injury burden*	147.8	121.9	103.5	0.171
Incidence of severe injuries <sup>§</sup>	1.3	1.0	0.7	0.022
Attendance at training (%)	81.2	84.7	85.2	0.021
Availability for matches (%)	87.1	86.8	89.2	0.173

\* Number of severe injuries (causing more than 28 days of absence from training and matches) per 1,000 hours of exposure ( $(\sum \text{severe injuries} / \sum \text{hours of exposure}) \times 1,000$ )

<sup>§</sup> Number of days of absence per 1,000 hours of exposure ( $(\sum \text{days of absence} / \sum \text{hours of exposure}) \times 1,000$ )

**Table 4.** Empowerment: KW tests for injury burden, incidence of severe injuries, attendance at training and availability for matches across low, moderate and high groups

	<b>Low (n = 17)</b>	<b>Moderate (n = 23)</b>	<b>High (n = 37)</b>	
	Median	Median	Median	P-value
Injury burden*	149.6	108.1	112.6	0.169
Incidence of severe injuries <sup>§</sup>	1.2	1.0	0.8	0.111
Attendance at training (%)	81.5	83.8	85.1	0.033
Availability for matches (%)	87.5	86.8	88.3	0.339

\* Number of severe injuries (causing more than 28 days of absence from training and matches) per 1,000 hours of exposure ( $(\sum \text{severe injuries} / \sum \text{hours of exposure}) \times 1,000$ )

<sup>§</sup> Number of days of absence per 1,000 hours of exposure ( $(\sum \text{days of absence} / \sum \text{hours of exposure}) \times 1,000$ )

**Table 5.** Innovative or lateral thinking: KW tests for injury burden, incidence of severe injuries, attendance at training and availability for matches across low, moderate and high groups

	<b>Low (n = 23)</b>	<b>Moderate (n = 16)</b>	<b>High (n = 38)</b>	
	Median	Median	Median	P-value
Injury burden*	147.9	113.8	109.5	0.318
Incidence of severe injuries <sup>§</sup>	1.2	1.1	0.8	0.313
Attendance at training (%)	81.3	85.3	85.3	0.033
Availability for matches (%)	86.3	89.2	88.5	0.202

\* Number of severe injuries (causing more than 28 days of absence from training and matches) per 1,000 hours of exposure ( $(\Sigma \text{ severe injuries} / \Sigma \text{ hours of exposure}) \times 1,000$ )

<sup>§</sup> Number of days of absence per 1,000 hours of exposure ( $\Sigma \text{ days of absence} / \Sigma \text{ hours of exposure} \times 1,000$ )

**Table 6.** Leading by example: KW tests for injury burden, incidence of severe injuries, attendance at training and availability for matches across low, moderate and high groups

	<b>Low (n = 23)</b>	<b>Moderate (n = 16)</b>	<b>High (n = 38)</b>	
	Median	Median	Median	P-value
Injury burden*	171.6	99.5	114.5	0.107
Incidence of severe injuries <sup>§</sup>	1.4	0.9	1.0	0.094
Attendance at training (%)	81.4	86.7	82.7	0.008
Availability for matches (%)	85.4	90.7	86.9	0.049

\* Number of severe injuries (causing more than 28 days of absence from training and matches) per 1,000 hours of exposure ( $(\Sigma \text{ severe injuries} / \Sigma \text{ hours of exposure}) \times 1,000$ )

§ Number of days of absence per 1,000 hours of exposure ( $\Sigma \text{ days of absence} / \Sigma \text{ hours of exposure} \times 1,000$ )

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