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## Original paper

## Discordance in injury reporting between youth-athletes, their parents and coaches

Ian Shrier<sup>a,\*</sup>, Debbie Feldman<sup>b,c</sup>, Huguette Akakpo<sup>b</sup>, Barbara Mazer<sup>c</sup>,  
Claude Goulet<sup>d</sup>, Imen Khelia<sup>a,c,d,e</sup>, Willem Meeuwisse<sup>e</sup>, Bonnie Swaine<sup>b,c</sup>

<sup>a</sup> Centre for Clinical Epidemiology and Community Studies, Lady Davis Institute for Medical Research,  
the Department of Family Medicine, SMBD-Jewish General Hospital, Montréal, Canada

<sup>b</sup> École de Réadaptation, Université de Montréal, Montréal, Québec, Canada

<sup>c</sup> Centre de Recherche Interdisciplinaire en Réadaptation du Montréal (CRIR), Jewish Rehabilitation Hospital,  
School of Physical and Occupational Therapy, McGill University, Montréal, Québec, Canada

<sup>d</sup> Department of Physical Education, Laval University, Québec, Canada

<sup>e</sup> University of Calgary Sport Medicine Centre, Calgary, Alberta, Canada

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**Abstract**

Hiring experienced health professionals to collect data on sport injuries is expensive, limits resources, and may be prohibitive for surveillance studies. The objective of this study was to obtain pilot data on whether youth self-report deserves further study. We followed 67 recreational and elite soccer players aged 11–17 for one season and compared responses of injured players with those of their parents/coaches. We defined our main outcome of discordance as any disagreement in responses between the youth, parent and coach (triad). When one person didn't know the answer, we categorised the responses as "concordance" if the other two members agreed. We omitted data when two people responded "Don't Know". Of 10 injuries that could be analysed, 29/30 interviews occurred within 21 days. For factual questions analysed, there was 100% concordance for the type and side of injury, and place where the injury occurred. There were 1–2 discordant triads for each of time of day, activity during injury and specific body part injured. There were greater discordances for date of injury, first-aid treatment, and opinions concerning underlying reasons for the injury. Interview-report by youth themselves should be explored as a possible low cost method of documenting youth sport injuries.

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**Keywords:** Agreement; Reliability; Epidemiology; Youth; Injury; Sport

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**1. Introduction**

Although physical activity in adolescence has been associated with many benefits,<sup>1,2</sup> injuries are common<sup>3</sup> and often associated with pain, weakness and functional disabilities.<sup>4,5</sup> The study of injuries requires reliable and valid documentation. Although investigators can use health care professionals employed by elite/professional teams to document injuries, these methods are not routinely available in community samples and investigators sometimes rely on adult self-report. Because recall bias or misclassification may be accentu-

ated in youth, some investigators have professionals follow each team.<sup>6</sup> However, the associated costs limit financial resources and would likely prohibit longer surveillance studies.

Before one can evaluate youth self-report as a low-cost alternative in a definitive study, a pilot study is necessary to determine if it even deserves further study. As part of a larger project examining the feasibility of studying return to activity following injury in youth, we obtained pilot data focused on the congruence of injury reports between injured youth and their parents and coaches. Although available data did not permit a direct comparison with professionals to assess validity, youth data could be compared to adult reports (which are generally considered acceptable<sup>7</sup>).

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\* Corresponding author.

E-mail address: [ian.shrier@mcgill.ca](mailto:ian.shrier@mcgill.ca) (I. Shrier).

## 2. Methods

For our pilot study, we chose to evaluate three elite and three community level soccer teams [English and French-speaking youth aged 11–17 years old] in the Montreal, Canada area. The local soccer associations supplied names of potential teams.

For brevity, we describe only the relevant processes of the larger feasibility study. We remunerated a designate for each team (\$125 CDN). When an injury occurred (defined as missing a game or practice due to trauma or overuse on or off the field), the team designate informed the research assistant by telephone, email or pager. The research assistant conducted separate telephone interviews with the youth athlete, parent and coach (“the triad”) as soon as possible. The current analysis includes questions asked of each triad member with regards to both factual injury data [date, time, injury type, body part, side of injury, activity, place, first-aid treatment applied], and opinion data on the underlying causes of injury [field conditions, rough play, attention, fatigue and general physical condition].

All triad members and the team designate signed informed consent documents and the ethics committee of the Montreal Centre for Interdisciplinary Rehabilitation Research approved the study.

Because this was a pilot study with a low expected injury rate (64 per 1000 players per season<sup>8</sup>), we provide descriptive statistics only and report the proportion of discordance/concordance for each question. We report the answers for each interviewee in Table 1. For analysis of concordance among triads, we assigned categories for each question as follows: (1) concordance if all three members of the triad agreed, or if one member didn't know the answer and the other two members agreed, (2) discordance if one member didn't know the answer and the other two members did not agree or if one member disagreed or all three disagreed and (3) not applicable if two persons of the triad didn't know (unable to assess congruence, data still presented). We opted for this categorisation because if there was concordance between the two study participants able to respond, future studies could arrange for a secondary source to be contacted if the primary source didn't know the answer to one or more specific questions.

## 3. Results

We approached 18 teams to obtain the 6 teams (3 elite and 3 community) necessary for our study. Of the 108 possible triads among these 6 teams, 67 (62%) agreed to participate (40 community and 27 elite). There were 11 injuries in 11 study participants (7 males and 4 females) during the season. The mean (S.D.) age of the injured athletes was 14.5 (0.9) years. One injured player could not be reached for interviews and was omitted from the analysis (10 injuries analysed).

The responses from each triad member are shown in Table 1, sorted by the number of days between the injury and interview (sorting is approximate because different triad members had different delays between injury and interview). For the factual questions where at least 2 triad members responded, there was 100% concordance for the type of injury (8/8), side of injury (7/7) or place where the injury occurred (10/10). There were few (1–2/10) discordant triads for time of day, activity during injury, and body part (includes youth-report of foot where coach/parent report first toe) For injury date, the youth report differed by 2 days once, and 5–7 days twice. For first-aid treatment, the youth agreed with an adult in all but one case. However, for the five opinion-related questions, there were a total of 20/40 discordances (eight triads for five questions), and at least 3/8 discordant triads for each question (10/20 discordances were due to the coach). The pattern of responses did not appear related to the number of days between injury and interview in this small sample for which most study participants were interviewed within 1–3 weeks of the injury.

## 4. Discussion

The results of this pilot study suggest that youth injury self-report should be explored as a low cost alternative to record factual information regarding injuries, but is less likely to be successful for questions related to injury date, first-aid treatment and subjective questions concerning the underlying causes of injury.

The reliability and validity of self-reported outcomes is a concern in all epidemiological studies. Information from hospital registries/insurance companies underestimate the frequency of sport injuries because injuries not requiring emergency room visits or para-medical expenses are excluded. Injury self-report is considered acceptable in adults if conducted within 4 weeks of the injury<sup>7</sup> but the number of injuries will be underestimated if 1-year recall is used.<sup>9</sup>

The reliability and validity of youth injury self-report has not been studied. Although there were considerable differences for underlying causes of injury, the results of our pilot study suggest that youth self-reports may be consistent with parental and coach reports for a variety of injury-related questions. Although we could not address validity directly, if youth are consistent with adults and adult reporting is acceptable, then youth reporting would likely be acceptable as well. Adult reporting of witnessed child events is considered reliable<sup>10</sup> but it remains to be determined if parent reporting of a child's injury is acceptable in our context. If larger studies support our small pilot study findings concerning factual information, hiring professionals to follow teams may be unnecessary for some research questions. Valuable and limited financial resources could then be re-directed to more research

Table 1

Discordance between youth athlete, coach and parent (triad). Age, sex, and competitive level (community vs. elite) of the athlete, and number of days between the injury and the interview for each member of the triad are shown. If one person didn't know an answer, we considered the responses as "No Discordance" if the other two members agreed and "Discordance" if the other two members did not agree. When two persons of the triad didn't know the answer, the question was omitted from the analysis

Subject	Age	Sex	Level	Days Between Injury-Interview	FACTUAL DATA								OPINION DATA				
					Injury Date	Time of Day	Type of Injury	Body Part	Side of Injury	Activity	Place Occurred	First-Aid	Poor Field	Rough Play Team	Poor Attention	Fatigue	Physical Condition
Youth	15	M	Community	1	28-Jul-06	Afternoon	Sprain	1st toe	Right	Recreational	Field	No	Medium	Medium	Medium	No/Mild	Equiv
Coach				1	28-Jul-06	Afternoon	Sprain	1st toe	Right	Recreational	Field	No	No/Mild	Medium	Don't Know	Don't Know	Equiv
Parent				1	28-Jul-06	Afternoon	Sprain	1st toe	Right	Recreational	Field	No	Medium	Medium	Medium	Don't Know	Equiv
Youth	13	F	Elite	1	17-Jun-06	Afternoon	Muscle	Thigh	Left	Game	Field	Yes	No/Mild	A lot	Don't Know	Medium	Less Good
Coach				2	Don't Know	Don't Know	Don't Know	Don't Know	Don't Know	Don't Know	Don't Know	Don't Know	Don't Know	Don't Know	Don't Know	Don't Know	Don't Know
Parent				1	17-Jun-06	Afternoon	Muscle	Thigh	Left	Game	Field	Yes	No/Mild	A lot	No/Mild	No/Mild	Equiv
Youth	14	M	Community	2	4-Sep-06	Afternoon	Don't Know	Knee	Left	Recreational	Home	No	Not a soccer injury				
Coach				2	Don't Know	Don't Know	Don't Know	Don't Know	Don't Know	Don't Know	Don't Know	Don't Know					
Parent				1	4-Sep-06	Afternoon	Muscle	Calf	Don't Know	Recreational	Home	Yes					
Youth	14	F	Elite	4	20-Jun-06	Evening	Sprain	Ankle	Left	Game	Field	Yes	No/Mild	No/Mild	No/Mild	No/Mild	Equiv
Coach				4	20-Jun-06	Evening	Sprain	Ankle	Left	Game	Field	Yes	No/Mild	No/Mild	Medium	No/Mild	Less Good
Parent				4	20-Jun-06	Evening	Sprain	Ankle	Left	Game	Field	Yes	No/Mild	No/Mild	No/Mild	No/Mild	Equiv
Youth	14	F	Elite	6	22-May-06	Morning	Concussion	Head	N/A	Practice	Field	Yes	No/Mild	No/Mild	No/Mild	No/Mild	Equiv
Coach				10	20-May-06	Morning	Concussion	Head	N/A	Practice	Field	Yes	No/Mild	Medium	No/Mild	No/Mild	Better
Parent				9	20-May-06	Morning	Concussion	Head	N/A	Practice	Field	Yes	No/Mild	No/Mild	Don't Know	Don't Know	Equiv
Youth	16	M	Community	15	12-Jun-06	Evening	Sprain	Ankle	Right	Other	Home	No	Not a soccer injury				
Coach				10	17-Jun-06	Don't Know	Don't Know	Ankle	Right	Other	Home	No					
Parent				15	12-Jun-06	Evening	Sprain	Ankle	Right	Other	Home	Yes					
Youth	15	M	Elite	16	Don't Know	Evening	Don't Know	Groin	Right	Practice	Field	No	No/Mild	No/Mild	No/Mild	No/Mild	Equiv
Coach				16	31-May-06	Evening	Muscle	Groin	Don't Know	Game	Field	No	No/Mild	Medium	Medium	No/Mild	Equiv
Parent				14	Don't Know	Don't Know	Don't Know	Groin	Don't Know	Practice	Field	Don't Know	No/Mild	No/Mild	Medium	Medium	Equiv
Youth	15	M	Elite	14	31-May-06	Evening	Sprain	Foot	Right	Game	Field	No	Medium	Medium	No/Mild	Medium	Better
Coach				16	31-May-06	Evening	Sprain	1st toe	Don't Know	Game	Field	No	No/Mild	Medium	No/Mild	Medium	Equiv
Parent				19	Don't Know	Don't Know	Don't Know	1st toe	Don't Know	Game	Field	Don't Know	No/Mild	Medium	Don't Know	No/Mild	Equiv
Youth	14	F	Elite	12	16-Aug-06	Evening	Sprain	Knee	Left	Game	Field	Yes	No/Mild	Medium	Medium	No/Mild	Less good
Coach				18	10-Aug-06	Evening	Don't Know	Knee	Left	Game	Field	Yes	No/Mild	A lot	Medium	A lot	Less good
Parent				20	9-Aug-06	Evening	Sprain	Knee	Left	Game	Field	Yes	No/Mild	Medium	No/Mild	No/Mild	Equiv
Youth	15	M	Elite	19	31-May-06	Evening	Don't Know	Heel	Left	Game	Field	Yes	Medium	A lot	No/Mild	Medium	Better
Coach				16	Don't Know	Don't Know	Sprain	Heel	Don't Know	Game	Field	No	No/Mild	Medium	No/Mild	Equiv	
Parent				19	31-May-06	Evening	Sprain	Heel	Left	Game	Field	Yes	A lot	A lot	No/Mild	No/Mild	Equiv

Legend:  
**Green** Triads with no discordance.  
**Yellow** youth was discordant  
**Blue** coach was discordant  
**Orange** parent was discordant  
**Red** All three were discordant.  
**Black** Either not applicable, the person did not know the answer or only one person knew the answer.

studies, including more individuals, addressing more questions and thus considerably expanding our knowledge base about youth injury. If more detailed information is required that cannot be provided by the youth, additional follow-up with adults involved may be included in the protocol.

We would however like to underscore that our results are based on a small pilot sample and need to be confirmed in larger studies. Further, our study participants were usually interviewed within 1–3 weeks and the effect of longer delays (expected to increase problems with recall) needs to be examined. In conclusion, youth self-report may be a possible inexpensive, feasible solution to the identification of injuries in youth and deserves further investigation.

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