

Knee Injury History Impacts Health-Related Quality of Life in Adolescent Athletes

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Health-Related Quality of Life

- A broad, multidimensional concept that represents an individual's overall satisfaction with his/her life (Testa 1996; Irrgang, 2002; Main, 2004)
 - Health domains: physical, emotional, social, school
- Affected by individual experiences, expectations, beliefs, and perceptions (Parsons, 2011; Testa, 1996; Irrgang, 2002; Main, 2004)
 - Essential to patient-centered, whole person care (Fayers, 2007; Parsons and Snyder, 2011; Evans and Lam, 2011)
 - Primary outcome of patient care (Guyatt, 1993, 2007; Testa, 1996)

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Knee Injuries

- Knee injuries in adolescent athletics
 - Approximately 15.2% of all reported injuries occur at the knee (Ingram, 2008; Swenson, 2013)
 - Comprises of the largest percentage of “severe” injuries (>21 days missed participation) (Darrow, 2007)
- Knee injuries often associated with both short- and long-term consequences
 - Including negative impact on HRQOL

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Impact of Knee Injury on HRQOL

- Military cadets (Cameron, 2013)
 - Individuals with a previous knee ligament injury report lower knee-specific HRQOL than those without a previous knee ligament injury
- College athletes (Lam, 2012; Huffman, 2008)
 - Individuals who previously suffered a knee injury reported lower knee-specific and generic HRQOL than those with no history
- It is unknown if similar deficits exist in adolescent athletes

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Purpose

- To determine the impact of knee injury history on HRQOL in adolescent athletes using the Pediatric International Knee Document Committee Form [Pedi-IKDC] and the Pediatric Quality of Life [PedsQL]

Subjects

	Sample Size	Age (years)	Height (cm)	Weight (kg)
History of knee injury	32	15.4±1.3	164.9±10.0	70.6±14.8
No history of knee injury	111	15.1±1.4	163.1±10.1	67.0±15.6

- Inclusion criteria
 - Medically cleared for full participation
 - Able to speak and read English
- Exclusion criteria
 - Currently suffering from an injury

Subjects

- Grouped by self-reported severity of a previous knee injury:
 - Positive knee history (HIS): Those who identified a previous knee injury resulting in loss of participation for at least one day
 - No knee history (NO-HIS): Those who did not identify having a previous knee injury
- The most common knee injury reported by the HIS group:
 - Ligamentous sprain (28.1%)
 - Tendinopathy (12.5%)
 - General knee pain (12.5%)

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Procedures

- All participants completed:
 - Knee injury history questionnaire
 - Pedi-IKDC
 - PedsQL
- Testing occurred during pre-participation examinations
 - Part of a larger prospective study related to the prevention of lower extremity injuries
- Testing time: 5-10 minutes

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Instrumentation: Pedi-IKDC

- Adolescent- and knee-specific patient-rated outcome measure
 - Modified IKDC: general instruction, grammar and terminology, question content/format, and mapping. (Iverson, 2010; Kocher, 2011)
 - Valid, reliable, and responsive (Kocher, 2011)
- Measures symptoms, function, and sports activity
 - 15 items scored on a Likert-type or binary scale
 - Total scores range from 0-100, with higher scores indicating better knee-specific HRQOL

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Instrumentation: PedsQL

- 23-item generic patient-rated outcome measure
 - Valid, reliable, and responsive (Varni, 1999; Varni, 2001; Varni, 2003)
- Generates a total and four subscale scores
 - Subscales: physical, emotional, social, school
 - Items are scored on a four-point Likert scale
 - Scores range from 0-100, with higher scores indicating a better generic HRQOL

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Statistical Analysis

- Independent-samples Mann-Whitney U tests were utilized for group comparisons
 - Pedi-IKDC: total score
 - PedsQL: total score and physical, emotional, social, and school functioning subscale scores
- Alpha was set at 0.05, two-tailed

Results

	No History	History	p-value
Pedi-IKDC			
<i>Total Score</i>	96.5±9.5	80.5±20.8	<.001*
PedsQL			
<i>Total</i>	90.4±9.1	84.3±10.8	0.002*
<i>Physical Functioning</i>	92.7±8.3	86.3±14.3	0.013*
<i>Emotional Functioning</i>	89.2±15.0	83.1±18.3	0.109
<i>Social Functioning</i>	92.7±11.7	88.8±13.2	0.131
<i>School Functioning</i>	85.6±15.0	77.8±16.5	0.008*

Discussion

- Despite being cleared for full sport participation, adolescent athletes with a previous knee injury generally experience lower HRQOL than their peers with no knee injury history
 - Knee-specific HRQOL
 - Physical functioning
 - School functioning

Discussion

- Adolescent athletes with a history of a knee injury report knee-specific and generic HRQOL deficits despite being medically cleared for sport participation
- These results corroborate with previous findings
 - Military cadets (Cameron, 2013)
 - Collegiate athletes (Lam, 2012; Huffman, 2008)

Discussion

- Larger differences were noted in the region specific as compared to the generic measure
 - Pedi-IKDC: 16 points
 - PedsQL: 6-8 points
- Differences across Pedi-IKDC and PedsQL
 - Types: specific vs. generic
- Clinical meaningfulness of differences?

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Clinical Implications

- Clinicians should be aware that athletes may experience deficits despite returning to full participation (Simon, 2013; Gill, 2014)
 - Impairments, functional limitations, school functioning
- Use of PRO measures during pre-participation exams
 - Identify individuals with history of knee injury despite being medically cleared for full participation

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Limitations and Future Directions

- Limitations
 - Self-report of previous injury
 - Multiple or recurrent injuries?
- Future investigations
 - Clinical meaningfulness of group differences related to HRQOL (eg, school functioning)
 - Clinical utility of the Pedi-IKDC in an adolescent athletic population

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Thank you!



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