Return to sport guidelines following total knee arthroplasty: A systematic review

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Background

- Osteoarthritis (OA) affects 3.9 million (13.6%) Canadians[1].
- In 2020, the global prevalence of knee OA was 16%[2].
- Total knee arthroplasty (TKA) is a successful, and commonly performed treatment for those with end-stage knee OA that is unresponsive [3].
- With a younger, more active population undergoing TKA, there are higher expectations for improvement in function, quality of life, and participation in sport[4,5].
- The literature describes risks for implant survivorship that may reduce participation in sport[6,7].
- Currently no clinical practice guidelines for healthcare practitioners exists for return to sport (RTS) following TKA.

Objectives

1. To identify and appraise the available evidence surrounding RTS following TKA
2. To develop an understanding of common themes surrounding current healthcare practitioner recommendations

Methodology

- The following electronic databases were searched: MEDLINE, CINAHL, Embase, Scopus, and SPORTDiscus.
- The Quality Assessment Tool for Studies with Diverse Designs (QATSDD) was used to evaluate the methodological quality of the eligible studies.
- The QATSDD is a 14-item mixed methods tool that uses a 4-point Likert scale (0-3), with a maximum of 42 points. A higher score indicates more rigorous study design, with >75% indicating a high quality paper[8].
- Two researchers screened and evaluated each article, any discrepancies were reviewed by a third researcher to establish consensus.

Inclusion/Exclusion Criteria*:* Published or unpublished between Jan 1st 1990- Nov 1st 2020. English and French languages. Type of surgery was restricted to TKA or unicondylar knee arthroplasty.

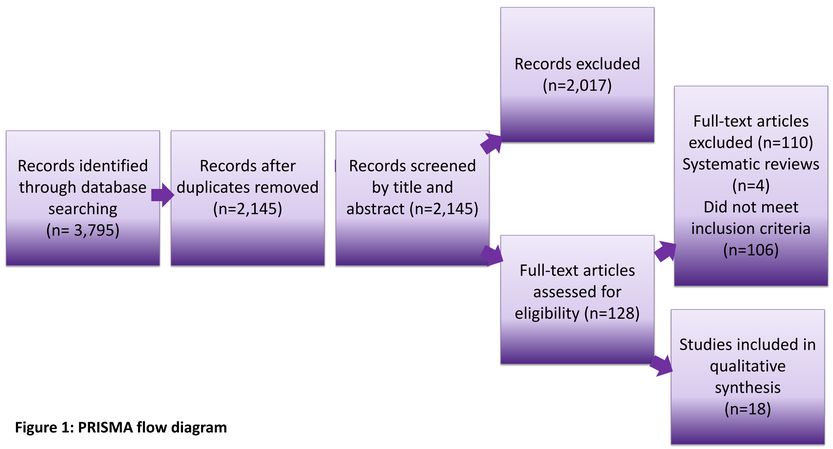

Figure 1: PRISMA flow diagram

Results

Quality Appraisal

- Limitations were found in most areas of study design; most prevalent in methodology, data collection and data analysis *(See Figure 2)*.

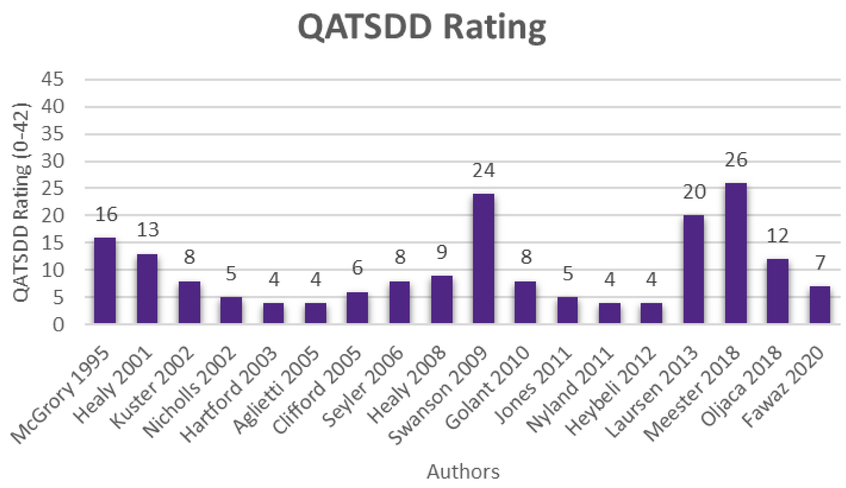

Figure 2. Critical appraisal summary with Quality Assessment Tool for Studies with Diverse Designs (QATSDD)

Thematic Analysis

- A thematic analysis of the 18 included studies was performed and underwent repeated revision to devise four major themes (*See Table 1)*.
- A theme was defined as a discrete topic in ≥3 articles.

Major themes	Sub-themes	Number of articles that mentioned theme (n=18)	Articles which presented theme (%)
Theme 1: Increase demand for TKA	Younger population	18	100
	Higher expectations	18	100
Theme 2: Level of impact of sport	Low impact	3	16.7
	Low to moderate impact	11	61.1
	Low to moderate impact (protective effect)	3	16.7
	Low to moderate impact and high impact with previous experience	1	5.6
Theme 3: Factors that influence recommendations	Implant survivorship	18	100
	Patient specific factors	16	88.9
	Preoperative rehabilitation	3	16.7
	Level of surgical experience	4	22.2
Theme 4: Return to sport timeline	Low impact should be encouraged immediately	1	5.6
	Rehabilitation within first 6 months followed by sport specific training	1	5.6
	3-6 months for no to low impact activities	2	11.1
	3-6 months for low to moderate impact activities	1	5.6
	N/A	13	72.2

Table 1. Thematic analysis. Articles which presented theme= percentage of total discussion of overarching theme (%).

Discussion

- The risks for implant survivorship associated with activity levels and RTS are poorly understood and vary across studies; resulting in conservative recommendations.
- A demand for high quality, evidence informed RTS guidelines following TKA has been proposed throughout the literature. Formulation of alternative study designs have not been attempted for two decades from when this gap in knowledge was identified.
- A trend towards a younger, more active patient population receiving TKA was identified in all included articles.
- The most consistent RTS timeline recommendation was return to no-to-low impact sport within 3-6 months post-TKA.
- Identification of patient specific factors influenced recommendations for RTS and associated timelines; those who were motivated and had preoperative sport experience had fewer restrictions.
- Overtime, recommendations are becoming less conservative due to advancements in implant design, surgical advancements, and the experience of clinicians.

Conclusion

- Low-to-moderate impact is recommended by healthcare practitioners for RTS post-TKA.
- A better understanding of acceptable levels of impact and its effects on implant wear is indicated to facilitate RTS recommendations.
- RTS recommendations should be patient-centred and include aspects of sport experience, patient goals, and considerations for quality of life.
- A Delphi study to generate an expert consensus for RTS clinical guidelines following TKA is recommended for future research.

Limitations

- Studies included were restricted to English and French languages.
- The studies included were of low quality and restricted to literature reviews and expert opinion, indicating little substantiation for current recommendations.
- Although the QATSDD allows for mixed methodology evaluation, it can disproportionately lower scores of literature reviews relative to surveys.
- The QATSDD involves subjectivity in the rating process due to the language of qualifiers used to grade each study.

References

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