Does Physical Activity Change after THA/TKA? A Systematic Review and Meta-Analysis
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**Background**
- Affects over 7 million Americans & expected to increase to 11 million by 2030
- Costs average $16,213 per TKA/THA hospital admission
- 30 min moderate PA 5x/wk or 20 min vigorous physical activity (PA) 3x/wk decreases risk for many serious co-morbidities

**Purpose**
- to conduct a systematic review of the literature, with meta-analysis, on the change in PA after THA or TKA surgery and evaluate other factors such as pain levels, physical function and quality of life that contribute to participation in PA.

**Methods**
- Librarian assisted computerized search of PubMed, Embase, and CINAHL.
- Screening, quality assessment, data abstraction were done in a duplicate manner.

**PRISMA Flow Diagram**
- Records identified through database searching (n=1354)
- Additional records identified through other sources (n=3)
- Records after duplicates removed (n=1081)
- Records screened (n=1081)
- Records excluded (n=1051)
- Full text articles assessed for eligibility (n=30)
- Studies included in qualitative analysis (n=11)
- Studies included in quantitative synthesis (meta-analysis) (n=11)

**Inclusion criteria: pre- & post-surgery measure of PA on same cohort, use of PA measure that provides frequency, intensity, and/or time of PA, and PA measured at least 2 months post-surgery
**Exclusion criteria: primary surgery not THA or TKA**

**Records identified through other sources (n=3)**
- Additional studies (n=2)
- Case control studies (n=1)
- Post-surgical PA measurement conducted <2 months after surgery (n=1)

**Records screened (n=1081)**
- Full-text articles excluded (n=19):
  - Did not include appropriate PA measure (n=16)
  - Case control studies (n=3)
  - THA/TKA not primary surgery (n=1)
  - Post-surgical PA measurement conducted <2 months after surgery (n=1)

**Summary of the evidence**

- Meta-analysis computed summary estimates of standardized mean difference (SMD) and 95% CI for PA tracked by accelerometer at 6 and 12 months, as well as intensity of PA at 12 months, quality of life (QoL) at 6 months, pain at 6 months, and physical function at 6 months
- Summary estimates were pulled using random effects models

**Analysis**
- Eleven articles were deemed eligible for inclusion in the study.

**Results**
- Overall pooled estimates indicated a small, non-significant increase of PA measured at 6 months for TKA (SMD=0.18), decrease for THA (SMD=-0.08), and total increase (SMD=0.09).
- Overall pooled estimate indicated a small-moderate, significant increase of PA measured at 12 months (SMD=0.43).

**Conclusions**
- Moderate and vigorous intensity PA significantly increased after surgery and light intensity PA showed a non-significant increase.
- QoL significantly increased at 6 months post-surgery.
- Pain showed a large significant decrease at 6 months post-surgery.
- Physical function increased overall across TKA and THA studies.
- High heterogeneity (I²) of quality of life, pain, and physical function measures across different studies.
- Quality assessment values ranged from 4 (n=2) to 5 (n=6) stars out of a maximum possible score of 6 stars.

**Clinical Relevance**
Choosing to undergo an elective THA/TKA may not increase PA alone. There may be a behavioral component that may need to be addressed in order to increase PA. Pain, however, does seem to decrease across the board and this can be a main limiting factor that, if decreased, may lead to a more active lifestyle. Therefore, physical therapists should focus on pain management along with patient education on the benefits of regular PA and PA parameters.

**References**