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## The Impact of Osteoarthritis Following Surgery on Health-Related Quality of Life in Former Collegiate Athletes

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**Objective:** Identify the impact of knee surgery on current health-related quality of life (HRQoL) in former collegiate athletes.

**Design and Setting:** Cross-sectional survey; athletic training laboratory.

**Participants:** One hundred individuals met the following inclusion criteria: between the ages of 40-65 and participated in an NCAA Division I sport (60 Males, 40 Females, 53.13±7.42years). Individuals were split initially into two groups: no history of knee injury requiring surgery (33 Males, 24 Females, 54.53±5.95years), and history of knee injury requiring surgery in college (n=43). The history of knee injury requiring surgery in college was further broken into two groups: history of knee surgery in college with no diagnosis of osteoarthritis (OA) later in life (n=10/43; 4 Males, 6 Females, 51.26±7.29 years), and history of knee surgery in college with physician diagnosed OA later in life (n=33/43; 23 Males, 10 Females, 54.21±7.64years).

**Intervention:** All individuals completed the Short Form-36 version 2 (SF-36v2) to evaluate current global HRQoL. The mean follow up time after the index injury was 27 years (range 19-42years). The SF36v2 is a survey of general HRQoL, and has two summary scores: physical (PCS) and mental (MCS), and eight subscales: physical functioning (PF), role physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role emotional (RE), and mental health (MH). Lower scores for the

SF36v2 indicate more disability (range 0-100). One MANOVA was conducted for the dependent variables: SF36v2 PCS and MCS. Another MANOVA was conducted for the dependent variables: SF36v2 eight subscales. Both MANOVAs had the independent variable group (healthy knee, surgical knee, and surgical knee/OA). Follow-up univariate analysis of variance were conducted on any significant findings. The alpha level was set at  $p < 0.05$  for all analyses.

**Main Outcome Measurement:** PCS, MCS, PF, RP, BP, GH, VT, SF, RE, and MH scores.

**Results:** HRQoL was significantly worse in the surgical knee/OA group, compared to the healthy knee group and the surgical knee group for the PCS and MCS ( $F_{(2,96)}=23.32$ ,  $p=0.001$ , Wilk's  $\Lambda=0.45$ ), and for the eight subscales ( $F_{(8,90)}=6.21$ ,  $p=0.001$ , Wilk's  $\Lambda=0.42$ ). There were no significant differences on any of the scales between the healthy knee group and surgical knee group ( $p > 0.05$ ). The largest differences were on the PCS, BP, RP, and PF scales between the healthy knee and surgical knee/OA groups; with the surgical knee/OA group scoring worse on the scales. Specifically, between those two groups the PCS, BP, RP, and PF had a mean difference of 15.57, 14.29, 13.44, and 12.09, respectively.

**Conclusions:** A majority of individuals with a knee surgery during their collegiate career developed OA. Decreases in HRQoL specifically, the physical scales were observed in individuals who sustained a knee injury requiring surgery and developed OA.

**Key Words:** knee surgery, osteoarthritis, long-term outcome