Abstract 360 – Table 1. Adjusted OR (95% CI) for Medial Cartilage Thickness Loss Associated with Baseline Malalignment

	Medial tibia, central subregion	Medial tibia, external subregion	Medial tibia, internal subregion	Medial tibia, anterior subregion	Medial tibia, posterior subregion	Medial WB femur, central subregion	Medial WB femur, external subregion	Medial WB femur, internal subregion
VARUS	2.69 (1.40, 5.16)	4.42 (2.37, 8.22)	1.24 (0.61, 2.52)	1.35 (0.78, 2.36)	1.42 (0.76, 2.63)	2.44 (1.40, 4.26)	3.29 (1.78, 6.09)	0.82 (0.44, 1.53)
VALGUS	0.40 (0.20, 0.81)	0.36 (0.18, 0.74)	0.62 (0.32, 1.23)	0.61 (0.31, 1.19)	1.03 (0.54, 1.98)	0.79 (0.41, 1.52)	0.46 (0.24, 0.91)	1.04 (0.53, 2.02)

WB = weightbearing. **Abstract 359** – Table 2. Adjusted OR (95% CI) for Lateral Cartilage Thickness Loss Associated with Baseline Malalignment

	Lateral tibia, central subregion	Lateral tibia, external subregion	Lateral tibia, internal subregion	Lateral tibia, anterior subregion	Lateral tibia, posterior subregion	Lateral WB femur, central subregion	Lateral WB femur, external subregion	Lateral WB femur, internal subregion
VARUS	0.82 (0.44, 1.52)	0.34 (0.17, 0.71)	1.04 (0.56, 1.93)	1.36 (0.73, 2.53)	0.49 (0.25, 0.94)	0.71 (0.36, 1.43)	0.65 (0.33, 1.28)	1.11 (0.58, 2.12)
VALGUS	2.97 (1.66, 5.33)	2.71 (1.44, 5.10)	2.04 (1.14, 3.65)	1.16 (0.64, 2.11)	3.16 (1.69, 5.92)	2.02 (1.07, 3.84)	2.34 (1.32, 4.13)	1.19 (0.63, 2.26)

WB = weightbearing.

alignment (Eckstein et al, 2008). We tested the hypothesis that varus malalignment at baseline is associated with baseline-to-two-year cartilage thickness loss at the central and external (i.e. medial-most) subregions of the medial tibia and weightbearing femur, and that valgus malalignment is associated with cartilage thickness loss at the central and external (i.e. lateral-most) most subregions of the lateral tibia and weightbearing femur.

Methods: All participants had knee OA (defined as K/L $\geq$2) in at least one knee and underwent full-limb radiography for alignment (as the hip-knee-ankle angle) at baseline and MRI at baseline and two years later using double oblique coronal FLASHwe sequences. Cartilage thickness was determined in five subregions within each of the medial and lateral tibial surfaces and three subregions within each of the medial and lateral weightbearing femoral surfaces at both time points using custom software (Chondrometrics GmbH, Ainring, Germany). Average thickness of each surface or subregion was analyzed. Logistic regression with GEE was used to analyze the relationship of varus (defined as $\geq$2° in the varus direction, vs. non-varus as reference) and valgus (defined as $\geq$2° in the valgus direction, vs. non-valgus as reference) malalignment with cartilage thickness loss of $\geq$5% at each surface and subregion, adjusting for age, gender, BMI, and baseline disease severity (K/L grade).

Results: The sample included 261 knees from 159 persons [mean age 66 years ($\pm$11, S.D.), BMI 30 kg/m^2 ($\pm$6), 75% women]. Thirty-eight% of knees were varus malaligned and 31% of knees were valgus malaligned. As shown in Table 1, varus malalignment at baseline was associated with a significant increase in the adjusted odds ratio (OR) for cartilage thickness loss in the central and external subregions of the medial tibial and medial weight-bearing femoral surfaces. As shown in Table 2, valgus malalignment at baseline was similarly associated with a significant increase in the adjusted OR for cartilage thickness loss in the central and external subregions of the lateral tibial and lateral weightbearing femoral surfaces and in the posterior and interior subregions of the lateral tibial surface. Neither varus nor valgus malalignment was associated with thickness loss in the non-stressed compartment (Tables 1 and 2).

Conclusions: In conclusion, varus malalignment at baseline was associated with a significant increase in the likelihood of loss in cartilage thickness between baseline and two years in the central and external subregions of the medial tibial and weightbearing femoral surfaces. Similarly valgus malalignment at baseline was associated with loss in cartilage thickness in the central and external subregions of both lateral surfaces and the lateral tibial posterior and interior subregions.

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ASSOCIATION OF RADIOGRAPHIC SEVERITY OF LUMBAR SPONDYLOSIS WITH LOW BACK PAIN AND RELATED DISABILITIES: THE ROAD STUDY

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Purpose: Although lumbar spondylosis is a major public health issue causing pain and functional disabilities in the elderly, the relationship between the radiographic severity and the symptoms is controversial. This study investigated the association of low back pain and related disabilities with radiographic severity of lumbar spondylosis using the baseline database of the ROAD (research on osteoarthritis against disability) study.

Methods: The ROAD study is a large scale population-based cohort study set up in 2005 consisting of three regional cohorts with a total of 3,040 participants. From the 1,690 participants in the mountainous and seacoast cohorts, this study analyzed the baseline data of 1,620 subjects who were 40 years or older and had not undergone lumbar spine surgery (573 men and 1,047 women, average 66.0 yrs.). The radiographic severity of lumbar spondylosis was determined by the Kellgren/Lawrence (KL) grade (0-4) at each intervertebral level from L1/2 to L5/S. As symptomatic parameters, we used the Roland-Morris disability questionnaire to assess low back pain and related disabilities, and two physical performance tests. Physical performance was assessed by the test of time to walk 6m (TW) and that to rise from a chair 5 times (RC), and the subjects were divided into short and long subgroups based on the mean value. Logistic regression analysis was used to determine odds ratio (OR) and associated confidence interval (CI) after adjustment for age and gender.

Results: Prevalence of radiographic spondylosis with KL$\geq$2 at the severest intervertebral level was 78.4% in men and 56.8% in women, and that with KL$\geq$3 was 38.2% in men and 37.7% in women, respectively. Prevalence of low back pain was 36.1% in men and 35.5% in women. Prevalence of low back pain and related disabilities with daily activities tended to be higher with age, while that of the pain at rest did not. For physical performance parameters, low back pain was associated with long TW group (OR=1.97, 95%CI=1.52-2.56) and long RC group (OR=1.78, 95%CI=1.39-2.56). Logistic regression analysis showed that KL$\geq$2 spondylosis was not associated with low back pain and related disabilities. Logistic regression analysis was performed to determine the association of low back pain and related disabilities with the number of intervertebral level with KL$\geq$3 using the number =0 as a reference group. Lumbar spondylosis with one KL$\geq$3 intervertebral level was not associated with low back pain and related disabilities. However, lumbar spondylosis with two KL$\geq$3 intervertebral levels and that with three or more levels were significantly

associated with low back pain and related disabilities (OR=1.53 and 1.98, 95%CI=1.06-2.21 and 1.46-2.69, respectively).
Conclusions: The present study showed that mild KL≥2 lumbar spondylosis was not associated with symptomatic parameters; however, more than moderate radiographic lumbar spondylosis with multiple KL≥3 intervertebral levels was associated with low back pain and related disabilities. This suggests that lumbar spondylosis with multi-level KL≥3 might be appropriate as the diagnostic criterion of radiographic lumbar spondylosis in terms of the relation to the symptoms. Although this was a cross-sectional study, future longitudinal survey in the ROAD study will elucidate the relationship of changes between radiographic findings and the symptoms in more detail.

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PREVALENCE AND PREDICTION OF RECURRENT MUSCULOSKELETAL SYMPTOMS DURING A TEN-YEAR PERIOD AND THE SIGNIFICANCE OF PHYSICAL ACTIVITY AT WORK

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Purpose: Work-related musculoskeletal disorders (WMSD) are defined as latent disorders caused, provoked, or aggravated by several risk factors mainly existing at work. Several studies have found WMSD to take a fluctuating course and recurrent symptoms may over time develop into chronic conditions such as ostheoarthritis. The Danish Work Environment Cohort (DWEC) with registrations every fifth year since 1990 offers a unique possibility to observe recurrent symptoms in specific body regions and within occupations with different exposure.
In this study is hypothesized that low physical activity at work as well as high physical activity are associated with recurrent WMSD. Specifically the following hypotheses are tested: 1) Recurrent musculoskeletal symptoms in a given body region are to a large extent present in the working population in terms of repeated reports of symptoms over a ten-year period. 2) Employees with a low, as opposed to high amount of sitting during daily work have: a higher frequency of recurrent musculoskeletal symptoms in the low back, an equal frequency in the hand/wrist, and a lower frequency in the neck and shoulder.
Methods: Telephone-interviews were performed in DWEC in 1995, 2000 and 2005. The interview included questions about working conditions and musculoskeletal health status. 2810 employees participated and the body regions included were the neck, shoulder, hand/wrist and low back. Recurrent symptoms in a body region were defined by if an employee consistently reported symptoms within the last 12 months in 1990, 1995 as well as 2000.
Physical exposure at work was quantified in terms of the amount of sedentary work based on the reported work day duration of sitting posture as follows: *Long* duration = sitting almost all or more than 75% of the work day, *Medium* duration= about 25% or 50% of the work day, and *Short* duration = very little or 'never'.
Chi square, Mantel Haenszel Chi square and Fisher's exact test were used to test for associations with gender, age and physical activity. A multiple logistic regression analyses stratified for gender and adjusted for age, smoking, height and body mass were used for testing recurrent symptoms of each specific body region and short/long duration of sedentary work.
Results: For the neck 18% of the females and 10% of the males had recurrent symptoms and for the shoulder 24 % of the females and 6 % of the males had recurrent symptoms. Recurrent low back symptoms were present in 20% of the females and 18 % of the males and recurrent hand/wrist symptoms were present in 4% of the females and 2 % of the males. The prevalence of recurrent symptoms in the *hand/wrist* and *low back* was higher for those with a short duration of sedentary work (p=0.013, p<0.0001) compared to a long duration of sedentary work. In contrast the prevalence of recurrent *neck* symptoms was higher among those with a long duration of sedentary work (p=0.045) compared to those with a short duration of sedentary work.
Conclusions: Recurrent musculoskeletal symptoms are present to a large extent among employees. Those with high work activity have a higher frequency of recurrent low back and hand/wrist symptoms compared to employees with mainly sitting work, who experience a higher frequency of recurrent neck symptoms. For prevention a variation in occupational physical activity must be recommended since both too long and too short amount of sitting work is associated with recurrent WMSD although affecting different body regions.

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SICK LEAVE IN OA PATIENTS BEFORE AND AFTER TOTAL KNEE OR HIP REPLACEMENT

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Purpose: Total knee and hip replacement (TKR/THR) are successful treatments for disabling and painful osteoarthritis (OA) when other treatments are unsatisfactory. However, in younger patients still working the result of joint replacement surgery on sick leave has been insufficiently studied. Our objective was to assess the patterns of sick leave before and after TKR/THR in OA patients using prospective observational data.
Methods: We identified all hip and knee OA patients in southern Sweden aged 58 years or younger who have had a TKR or THR between Jan 2003 and Oct 2006 using the Skåne Health Care Register. Subjects who died, started on disability pension, or had had more than one TKR/THR during the study period were excluded. The sample included n=199 with TKR (56% women) and n=276 with THR (46% women). Data was cross-referenced individually with data for sick leave from the National Insurance Agency (handles all sick leave payments for Swedish residents). We calculated the proportion of patients with ongoing sick leave in 30-days intervals from 360 days before until 360 days after the TKR/THR. We also compared the 6 month preoperative period (day -210 to -30) vs. the 6 month postoperative period (day 180 to 360) using paired t-tests.
Results: The pre- and postoperative share of subjects with ongoing sick leave was higher among OA patients with TKR compared to OA patients with THR. The peak proportion on sick leave occurred at the time of surgery where approximately 80% were

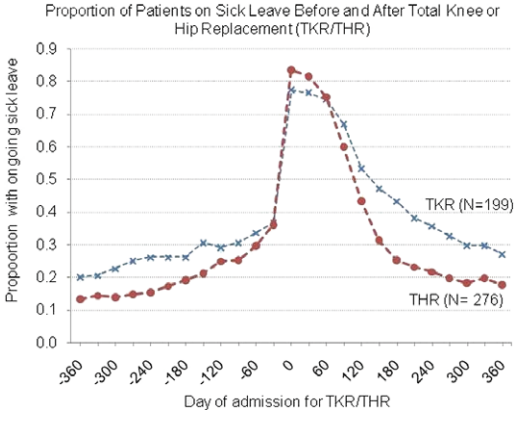

Figure 1