**Background** The effect of exercise to prevent low back pain (LBP) and associated disability is uncertain. We carried out a meta-analysis to address this question.

**Methods** Literature searches were conducted in PubMed, Embase, Cochrane Library, Google Scholar, and Research Gate from their inception through September 2016. Randomized controlled trials (RCT) and clinical controlled trials (CCT) were eligible for inclusion in the review if they compared an exercise intervention with usual daily activities and at least some of the participants were free from LBP at baseline.

**Results** Sixteen controlled trials including 13 RCTs and 3 CCTs qualified for meta-analyses. Exercise alone reduced the risk of LBP by 33% (risk ratio (RR)=0.67, CI: 0.53 to 0.85, $I^2$=23%, 8 RCTs, N=1634) and exercise combined with education by 27% (RR=0.73, CI: 0.59 to 0.91, $I^2$=6%, 6 trials, N=1381). The severity of LBP and disability due to LBP were also lower in the exercise than control groups. Moreover, results were not changed by excluding the CCTs, or by adjustment for publication bias. There were few trials on healthcare consultation or sick leave for LBP, and meta-analyses of these trials did not show statistically significant protective effects of exercise.

**Conclusions** Exercise reduces the risk of LBP and associated disability, and a combination of strengthening with either stretching or aerobic exercises performed 2–3 times/week can reasonably be recommended for prevention of LBP in the general population. However, education about back disorders, ergonomic principles or exercise effects appears to have no additional beneficial effect on LBP.

## Poster Presentation

## Musculoskeletal

| 0057 | A NOVEL RISK PREDICTION TOOL FOR DISABILITY PENSION DUE TO MUSCULOSKELETAL DISORDERS |

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**Background** It is important to identify individuals at high risk of work disability and target healthcare interventions at the high risk group. The objective of this study was to develop and validate a novel risk prediction tool using a points system to predict the risk of future disability pension due to musculoskeletal disorders (MSDs).

**Methods** The development population, the Health 2000 Survey, consisted of a representative sample of employees aged 30–60 years (N=3676) and the validation population, the Helsinki Health Study, consisted of employees of the City of Helsinki aged 40–60 years (N=6391) living in Finland. Both survey data sources were linked to disability pension due to MSDs and mortality data from national registers for 11 years follow-up.

**Results** The discriminative ability of the model with six predictors was good (Gönen and Heller's K concordance statistic=0.821). We gave easy-to-use points to six predictors: sex-dependent age, high level of education, pain limiting daily activities, multisite musculoskeletal pain, arthritis, and a surgery for a spinal disorder or carpal tunnel syndrome. A score 3 or higher out of 7 (top 30% of the index) had good sensitivity (83%) and specificity (70%). Individuals at the top 30% of the risk index were at 29 (CI: 15–55) times higher risk of disability pension due to MSDs than those at the bottom 40%.

**Conclusion** This easy-to-use screening tool based on self-reported risk factor profiles can help to identify individuals at high risk for disability pension due to MSDs.

## Poster Presentation

## Musculoskeletal

| 0075 | DETERMINANTS OF INTERNATIONAL DIFFERENCES IN THE PREVALENCE OF MULTISITE MUSCULOSKELETAL PAIN IN WORKING POPULATION |

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**Background** The prevalence of disabling regional pain varies widely between countries, even among people with similar jobs. It appears that the factors driving this variation predispose to musculoskeletal pain in general rather than being specific to any one anatomical site. To explore at what age they act, and whether they might be amenable to intervention, we analysed previously collected data from a cross-sectional survey.

**Methods** Information about musculoskeletal pain and risk factors was elicited at interview from six groups of workers (N=855, response rate 95.4%) defined by the nature of their work (non-manual or manual) and their country of residence and ethnicity (UK white, UK of Indian subcontinental origin and Indian in India). We compared the 12 month prevalence of multisite pain across the six occupational groups with adjustment for potential confounders.

**Results** Overall, 200 participants (23%) reported pain at ≥3 sites, which was much less frequent in Indian manual and non-manual workers than among white non-manual workers in the UK (adjusted ORs 0.04, 95% CI: 0.01 to 0.2, and 0.2, 95% CI: 0.1 to 0.6). However, rates in UK workers of Indian subcontinental origin were very similar to those in white UK workers. This pattern was maintained when analysis was restricted to participants aged <35 years, and when second and later generation migrants were excluded.

**Conclusions** Large differences in pain prevalence between the UK and India are attributable to environmentally-determined factors which influence pain at multiple anatomical sites, impact by early in adult life, and act soon after moving from India to the UK.