SHORT REPORT

Physical inactivity: a risk factor for low back pain in the general population?

H S J Picavet, A J Schuit

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Heavy physical work load, frequent lifting, frequent bending and twisting, and extreme sports activities are established risk factors for low back pain (LBP).[1] Lack of physical activity, on the other hand, is also often seen as a risk factor, especially for the development of chronic low back conditions.[1] To get insight into the potential health effect of health promotion campaigns for physical activity on the burden of low back conditions we studied whether physical inactivity predicts low back pain one to four years later in the general population.

A POPULATION BASED COHORT

Data from a population based cohort of the Monitoring Project on Risk Factors for Chronic Diseases (the MORGEN-study[2]), who lived in Maastricht, were analysed. Baseline measurements were carried out in 8291 persons (response=50%) aged 20–59 during 1993 untill 1997. Altogether 7611 persons were send a follow up questionnaire in 1998. Of those 66% responded: complete follow up data are available for 5007 persons. Data for 1993 were excluded because the measurement of physical activity changed after the first year, leaving a total of 3759 participants.

Measurements included a validated questionnaire on physical activity.[3] Physical inactivity was defined as the lack of moderate activities—that is, less than 0.5 hour per day or week spent on activities of at least 4 METs,[4] that is, heavy labour, cycling, gardening, and many sports. We did not include walking to calculate the total time spent per week on moderate activity because it was not included in the Dutch recommendation.

NO EFFECT OF INACTIVITY

More than one third (36.1%) of the population spent less than 0.5 hours per day being physically active including work and leisure time activities. More than one eighth (12.9%) was less active than 0.5 hours per week. If only leisure time activities were included those figures were 51.8% and 23.3% respectively.

LBP after one to four years was highly determined by LBP at baseline but not by physical inactivity during baseline, independent from the definition that was used for LBP or physical inactivity (table 1). Cross sectional at baseline there was also no association between physical inactivity and LBP (not shown).

Although gender and age group contributed to the prediction of low back pain after one to four years, the lack of predictive power of baseline physical inactivity is the same in different subgroups—that is, men/women, different age groups, working/non-working, or educational level (not shown). In addition, the results did not differ by numbers of years of follow up.

CONCLUSION

In this study we found no proof that persons who are physically inactive are at increased risk for LBP. According to our data, no health effects in terms of a reduction in the burden of LBP in the general population can be expected if we could successfully stimulate people to meet current physical activity recommendations. This does not, however, give us a reason to stop facilitating an increase in (leisure time) physical activity levels within the population because there are many other reasons to do so, such as the promotion of general wellbeing and the prevention of many health problems such as osteoporosis, obesity, and coronary heart disease.

For the prevention of LBP, however, alternatives should be explored. There could be a focus on preventive possibilities ofspecific physical activities and this asks for more research of the role of quality rather than quantity of exercise and physical activity.

Table 1 Physical inactivity determinants of low back pain after one to four years (OR and 95% confidence intervals)

	%	Low back pain after one to four years*	
		One year period prevalence (41.2%)	Chronic low back pain (13.9%)
Age (per 10 years)		0.86 (0.80 to 0.92)	1.11 (1.00 to 1.23)
Gender (women (n=2066) *v* men (n=1693))		1.76 (1.53 to 2.04)	2.00 (1.61 to 2.48)
Low back pain			
One year period prevalence	53.7	5.74 (4.95 to 6.67)	–
Chronic (>3 months)	19.3	–	8.65 (7.04 to 10.6)
Physical inactivity			
<0.5 h per day, work and leisure time	36.1	1.05 (0.90 to 1.22)	0.97 (0.78 to 1.20)
<0.5 h per week, work and leisure time	12.9	1.03 (0.83 to 1.28)	0.85 (0.63 to 1.15)
<0.5 hour per day, leisure time	51.8	1.04 (0.90 to 1.21)	0.99 (0.80 to 1.21)
<0.5 hour per week, leisure time	23.3	1.11 (0.94 to 1.32)	0.91 (0.72 to 1.15)

*Separate logistic regression models for one period prevalence of LBP and chronic LBP and for the separate physical inactivity parameters. All logistic regression models included age, gender, LBP at baseline. The ORs for age, gender, and the LBP parameters came from the model including the first physical activity parameter (that is, <0.5 h per day work and leisure time activities).

Authors' affiliations
H S J Picavet, A J Schuit, National Institute of Public Health and the Environment, Netherlands

Correspondence to: Dr H S J Picavet, Centre for Prevention and Health Services Research (PZO, pb 101), National Institute of Public Health and the Environment, PO box 1, 3720 BA Bilthoven, Netherlands; E: susan.picavet@rivm.nl

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REFERENCES

1 **Hoogendoorn WE**, van Poppel MN, Bongers PM, *et al*. Physical load during work and leisure time as risk factors for back pain. *Scand J Work Environ Health* 1999;**25**:387–403.
2 **Picavet HSJ**, Schouten JSAG. Physical load in daily life and low back problems in the general population-The MORGEN Study. *Prev Med* 2000;**31**:506–12.
3 **Pols MA**, Peeters PHM, Ocké MC, *et al*. Estimation of reproducibility and relative validity of the questions included in the EPIC physical activity questionnaire. *Int J Epidemiol* 1997;**26**:S181–9.
4 **Pate RR**, Pratt M, Blair SN, *et al*. Physical activity and public health. A recommendation from the Centers for Disease Control and prevention and the Amercian College of Sports Medicine. *JAMA*. 1995;**273**:402–7.