# The Bergen experiments

Short summary prepared for the DARES-Conference on Experiments for Employment and Education Public Policies, 22-23 May 2008.

By Astrid Grasdal, Associate Professor, Department of Economics, University of Bergen, Norway.

*Introduction*

In the early 1990s, musculoskeletal pain accounted for approximately 45 % of Norwegian sickness spells lasting more than eight weeks and for more than one third of all new entrants into disability pension every year. Workers on sick leave due to such complaints are normally followed up by a general practitioner (GP) and given some physical treatment, physiotherapy in particular. In the Bergen experiments, workers on sick leave due to musculoskeletal pain received treatment that, in addition to physiotherapy, also included a cognitive part aimed at increasing their knowledge about their health problems and increasing their ability and motivation to cope with them. The main purpose of the experiments was to investigate if such interventions improve the ability to uphold work. In order to identify treatment effects, the experiments were performed as randomised controlled studies. In both experiments treatment took place at an outpatient clinic established for the purpose of rehabilitating workers on sick leave due to musculoskeletal disorders such as chronic low-back pain and more generalised muscle pain.

The Bergen Experiment I (BE-I) enrolled participants during November 1993 to March 1995. Evaluation based on two years follow up through register data revealed no significant differenced in re-employment rates or earnings between participants in the treatment- and the control group (Bratberg et al. (2002)). The Bergen Experiment II (BE-II) was established as a direct follow-up of the BE-I. In the second experiment, two treatment programmes with different intensity of cognitive and physical interventions were evaluated against "standard practice". The most extensive programme was similar to the programme evaluated in BE-I. The motivation for running a second experiment was to investigate if participants responded differently to treatment depending on characteristics not well observed in BE-I, such as severity of health problems, job motivation and own belief in returning to work. Participants were enrolled during December 1995 to March 1997, based on the same inclusion criteria as in BE-I. Evaluation based on follow up data from administrative records revealed heterogeneity in treatment effects (Haldorsen et al. (2002), Skouen et al. (2002), Skouen et al. (2006)).

In both experiments collection of data for participants as well as for non-participants allowed for within-study comparison of experimental and non-experimental estimates of programme effects on earnings and return to work (Bratberg et al. (2002)), and for evaluation of sample selection estimators to control for attrition bias in social experiments, (Grasdal (2001)). The BE-I was also integrated in a systematic review of replication studies to assess the ability of non-experimental designs to replicate effects obtained in social experiments (Glazerman et al. (2003)).

This summary presents the design and main results from the two experiments. For further details the reader is referred to the different publications referred to in this text.

*BE-I: Experimental Design*

The experiment included workers on sick leave for eight weeks or more with diagnoses given by a GP indicating back pain, neck/shoulder pain, general muscle pain and other conditions of more localised musculoskeletal disorders. In addition to the medical criterion,

inclusion required that participants held a permanent job (full time or part time). Participants were recruited from the approximately 285 000 persons living in Bergen or in one of the five surrounding municipalities. During the enrolment period from November 1993 to March 1995 those who met the inclusion criteria were contacted in writing by the local social insurance authority inviting them to participate in the experiment. In the invitation letter it was emphasised that participation was voluntarily, that acceptance or rejection of the invitation would not affect sickness benefits, and that participation could mean assignment to a control group, which simply would imply ordinary treatment through their GP.

Workers who volunteered to receive the treatment first went through an examination performed by physiotherapists not involved in the treatment. This examination consisted of a set of standardised tests of functional ability and a medical/psychological questionnaire. Participants were then randomly assigned to treatment or to a control group.[1] Those assigned to treatment underwent a rehabilitation programme that lasted four weeks with six hours sessions five days a week. Treatment involved both individual and group interventions.[2] In addition, participants in this group were followed up by the treatment team and given individual advice at three, six and ten months after they received treatment at the clinic. Participants in the control group were subjected to ordinary treatment by their GP without any systematic feedback or advice on therapy. After 12 months both the treatment and the control group underwent a new examination identical to the one performed before the random assignment.

Of 1648 invited workers who met the inclusion criteria,[3] 560 accepted the invitation (participants), 498 responded negatively by returning an answer explaining that they did not want to receive the treatment (negative responders), and 590 did not respond at all to the invitation (non responders). In total, 358 participants were assigned to the treatment group and 202 to the control group. Of those assigned to treatment, 333 completed the program, 3 were excluded for medical reasons by the clinic while 22 withdrew from the programme before treatment was completed.

*Data*

For those invited to the experiment (participants and non-participants) the National Insurance Administration (NIA) provided data from administrative records with information on timing and amounts of payments of sickness benefits, rehabilitation benefits and disability pension for a follow-up period of five years. Data from the NIA also included information on gender, date of birth/death, marital status, annual earnings, spouses annual earnings, and municipality of residence. Characteristics of participants and non-participants in BE-I are given in Table 1.

For participants in the experiment a standardised physiotherapy test and a comprehensive questionnaire were used to collect data regarding physical and mental health before treatment and at 12 months follow up. Due to non-response at follow-up post-treatment data on health outcomes could only be collected for 94 percent of the

[1]In order to ensure that the treatment groups always were filled, and that participants assigned to treatment never had to wait for more than one treatment period (five weeks), the allocation sequence followed an unequal randomisation of 2:1 in favour of the treatment group.

[2] The type of treatment is documented in greater detail in Haldorsen et al. (1998).

[3] One individual declined having any information regarding him/herself collected for evaluation purposes and was treated as not meeting the inclusion criteria.

participants in the treatment group and 60 percent of the controls. Data from the social insurance record were not hampered by attrition.

To assess the impact of treatment on re-employment a dichotomous measure of outcome is used. The dichotomous outcome variable indicates whether the individual has returned to work or not, and is based on sick leave status in each calendar month during the follow up period. Workers who are registered with some sickness benefits, rehabilitation benefits or disability pension in parts of, or throughout the entire calendar month, are defined as not having returned to work. We also assessed the impact of treatment on annual earnings two years after enrolment.

*Programme effects*

Evaluation of health outcomes based on 12 months follow up shows that participants in the treatment group on average had less pain, better ergonomic behaviour and higher life quality than controls (Haldorsen et al. (1998)). However, these differences are not adjusted for potential problems with selection bias du to attrition.

There were no significant differences in average return to work rates or post treatment earnings between the treatment and the control group, Table 1. Return to work rates for non-participants suggest that they had on average better health that those who opted to participate in the experiment, Figure 1.

*The BE-II: Experimental design*

Participants in the second experiment were recruited by using the same administrative routines and pre-defined inclusion criteria as were used in the first experiment. As in BE-I, data on post-treatment labour market outcomes were collected from national social insurance records.

Experience from treatment of participants in BE-I suggested that members of the initial target group responded differently to the treatment provided in the programme. Whether participants benefited from treatment appeared to depend on factors related to the extent of their health problems, job motivation and own belief in returning to work. Participants with less serious health problems, considered to have a high probability of returning to work, appeared to have low or no programme effect, while participants with more severe health problems and low probability of returning to work appeared to have significant effect of the programme. To better identify treatment effects in BE-II, participants were exposed to a simple standardised screening test before randomisation. The test consisted of a questionnaire regarding psychological and motivational factors, and four standardised physiotherapy tests.[4] Based on test results, a scoring system was used to classify participants into three categories according to prognosis (good, medium, and poor) for returning to work. Under normal operating conditions, it was implicitly assumed that persons with good prognosis for return to work would be referred to "treatment as usual" in the primary health care sector. Such treatment usually involves follow up by a general practitioner combined with some physiotherapy. Persons with medium prognosis for return to work, would be offered a Light Treatment Programme (LTP), while persons with poor prognosis, would be subjected to the Extensive Treatment Programme (ETP). Treatment in the LTP consisted of a one-day programme at the clinic where participants were educated about their health problems. This part was aimed at reducing participant's fear about their health problems and learning them to avoid behaviour that could worsen them. Participants also received help to put together individually based exercise programmes that they were

[4] Details regarding the screening battery and treatment are given in Haldorsen et al. (2002).

encouraged to do on their own. Participants were called back in groups for another appointment with the treatment team at the clinic after three, six and ten months. The most extensive treatment programme in BE-II involved the same type of cognitive interventions as in the LTP, and more exercise. This programme lasted four weeks with six hours session's five days per week. Participants in the ETP were also called back for the same follow ups as participants in the LTP.

With randomised assignment to the different treatments, the ETP was, like in BE-I, given both to persons with low probability of returning to work who were assumed to benefit from the programme, and to persons with high probability of returning to work, assumed to benefit little or nothing from the programme. Hence we could test the assumption that high probability of return to work is associated with low or no programme effects.

*Data*

Like in BE-I, participants in the BE-II were workers on sick leave for at least eight weeks with diagnosis given by a general practitioner indicating back pain, neck pain or more generalised muscle pain. To be included, participants had to hold permanent jobs, full time or part time. During the enrolment period from December 1995 throughout March 1997 all individuals who met the inclusion criteria and were living in Bergen or one of the surrounding municipalities, were invited to participate in the experiment. Of 1989 invited persons, 814 initially accepted the invitation. Before randomisation, some of them dropped out (107) or were excluded for medical or administrative reasons (52). The 655 remaining participants were screened and then, independently of the screening result, randomly assigned to either of the two different programmes, or to the control group.[5] Table 2 shows the distribution of participants according to prognosis for returning to work and randomisation.[6]

Individual follow-up data with information about amount and timing of payments of sickness benefits, rehabilitation benefits and disability pension, annual earnings, age, gender, marital status and spouses annual earnings were provided from the Norwegian National health insurance administration. These data are merged with data on diagnosis, screening results and treatment group. In addition to collect follow up data from the registers, all participants were surveyed approximately twelve months after enrolment with questions regarding health status, quality of life, and use of health services. Results presented here are based on follow-up data collected from the registers.

Summary statistics for participants in the control group and the two different treatment groups are given in the three first columns of Table 3. Like in BE-I, a typical participant in BE-II is a middle aged female with pre-programme earnings of about NoK (1996) 188000 (approximately $25000). The next three columns in Table 3 show summary statistics of participants as they were classified by the screening. If the screening rather than randomisation had been deciding for type of treatment, more females and slightly older workers would have received one of the two treatments at the clinic.

[5] Both screening and randomisation took place at the rehabilitation clinic.

[6] For each group of 60 participants, randomisation assigned 25 to the control group, 20 to the LTP and 15 to the ETP.

*Outcome*

Absence of benefit payments in a given month signify return to work in that month.[7] The results are based on follow-up data for the first 28 months after enrolment. Means and standard deviation for months returned to work and post-treatment earnings with different treatments are reported for the full sample and for each screening category in Table 4.

Since screening and randomisation were carried out independently, observed differences in outcome over time between ETP's and controls with poor prognosis, i.e. low return-to-work probability, yields estimate of the mean impact of the ETP if assignment to the LTP had been based on screening results. Similarly, the differences in average outcome between the LTP's and the controls with medium pre-treatment probability of returning to work provide estimate of the impact of the LTP.

Figure 2 show return to work for all participants in the experiment, independent of screening result. Figure 3-5 show return to work rates with different treatments for participants with poor, medium or good prognosis for return to work.

From Figure 3 we see that participants with poor prognosis who received treatment in the ETP returned to work at a considerably higher rate than their control group counterparts. On average, during the 25 follow up months after treatment, we find that the difference in total numbers of months with fully return to work between ETP's and controls was about 4 months (Table 4). The null hypothesis of equal group means is rejected at the 5 percent level by a t-test. The difference in group proportions having at least 18 months in work between the ETP's and the controls is 0.192 in favour of the ETP. Results from regression of the probability of return to work are reported in column 3 and 4 in Table 5. The estimated coefficient for treatment in the ETP is positive, considerably larger than the coefficient obtained from estimation on the full sample and statistically significant at the 5 percent level. Results also show that the probability of returning to work more permanently decreases with age, and is lower for participants sick listed for neck/shoulder pain and generalised muscle pain. The positive difference in return to work between ETP's and controls is carried over to post-treatment earnings as well, Table 6. However, the regression adjusted estimate of the programme effect of positive NoK 26 269 is considerably lower than the effect obtained from taking the difference in mean earnings between treated and controls, and not statistically significant. On average, participants with poor prognosis for returning to work did not benefit in terms of higher return to work rates or increased post-treatment earnings from receiving the LTP.

For participants with medium prognosis (Figure 4), return to work proportions is clearly higher for LTP's than for controls in some months but slightly below in other months. A similar picture emerges for participants who received the ETP. The regression adjusted estimate of the effect of LTP is positive and somewhat higher that when estimated on the full sample. The coefficient remains statistically insignificant. The programme effect on post-treatment earnings is negative NoK 1567, and statistically insignificant.

Treatment effects were also estimated for participants with high probability of return to work, i.e. good prognosis. This group did not benefit significantly from any of the treatments provided at the rehabilitation clinic.

[7] If a persons withdraw from the labour force altogether, he or she will by mistake be included among those returned to work. However, since participants have a job to return to and are entitled to receive social insurance benefits if they are sick, this outcome is unlikely.

References:

Bratberg, E., Grasdal, A.L., and A.E. Risa: Evaluating social policy by experimental and nonexperimental methods. *Scandinavian Journal of Economics***,** 104, 147-171, 2002.
Glazerman, S., Levy, D.M., and D. Myers: Non-experimental versus Experimental Estimates of Earnings impacts. *Annals, American Academy of Political and Social Science,* Vol. 589, September 2003, pp. 63-93.

Grasdal, A.: The performance of sample selection estimators to control for attrition bias. *Health Economics***,** 10, 2001, 385-398.

Haldorsen, E.M.H., Kronholm, K., Skouen, J.S. and H. Ursin: Multimodal Cognitive Behavioural Treatment of Patients Sick-listed for Musculoskeletal Pain: A Randomized Controlled Study. *Scandinavian Journal of Rheumatology,* 27, 16-25, 1998.

Haldorsen, E.M.H., Grasdal, A.L., Skouen, J.S., Risa, A.E., Kronholm, K. and H. Ursin: Is there a right treatment for a particular patient group. Comparison of ordinary treatment, light multidisciplinary treatment, and extensive multidisciplinary treatment for long-term sick listed employees with musculoskeletal pain. *Pain***,** 95, 49-63, 2002.

Skouen, J.S., Grasdal, A.L., Haldorsen, E.M.H. and H.Ursin : Relative Cost-effectiveness of extensive and light multidisciplinary treatment programs versus treatment as usual for patients with chronic low back pain ob long term sick leave. *Spine*, 27, 901-910, 2002.

Skouen, J.S., Grasdal, A., and E.M.H. Haldorsen: Return to work after comparing outpatient multidisciplinary treatment programs versus treatment in general practice for patients with chronic widespread pain. *European Journal of Pain* **,** 10, 145-152, 2006.

Table 1 Summary statistics for the participants and the non-participants in BE-1.

| | Participants | | | | Non-participants | | | |
|---|---|---|---|---|---|---|---|---|
| | Treated | | Controls | | Negative responders | | Non responders | |
| | Mean | Std.dev | Mean | Std.dev | Mean | Std.dev | Mean | Std.dev |
| Male | 0.37 | | 0.37 | | 0.35 | | 0.50 | |
| Age | 43.5 | (10.6) | 43.3 | (10.5) | 46.0 | (11.2) | 42.3 | (11.6) |
| < 30 | 0.10 | | 0.13 | | 0.09 | | 0.14 | |
| 31-45 | 0.44 | | 0.43 | | 0.36 | | 0.46 | |
| 46-55 | 0.27 | | 0.29 | | 0.31 | | 0.23 | |
| 56-65 | 0.18 | | 0.15 | | 0.24 | | 0.17 | |
| Married | 0.61 | | 0.62 | | 0.64 | | 0.56 | |
| Single | 0.17 | | 0.16 | | 0.18 | | 0.25 | |
| Previously married | 0.22 | | 0.22 | | 0.18 | | 0.19 | |
| Back pain | 0.47 | | 0.52 | | 0.40 | | 0.44 | |
| Neck pain | 0.15 | | 0.16 | | 0.15 | | 0.16 | |
| Generalised pain | 0.11 | | 0.07 | | 0.09 | | 0.07 | |
| Other diagnosis | 0.27 | | 0.24 | | 0.36 | | 0.33 | |
| Months on sick leave | 3.2 | (1.2) | 3.1 | (1.2) | 2.9 | (1.2) | 2.9 | (1.2) |
| Living in Bergen | 0.87 | | 0.85 | | 0.85 | | 0.79 | |
| Earnings(-2) [b] | 186.6 | (79.0) | 179.4 | (84.1) | 188.0 | (89.3) | 183.5 | (96.3) |
| Earnings(-1) [b] | 193.4 | (76.4) | 185.5 | (77.71) | 194.0 | (102.1) | 195.5 | (89.1) |
| Earnings(0) [a] | 189.2 | (75.8) | 183.1 | (75.5) | 192.5 | (85.8) | 205.5 | (89.5) |
| Earnings(+2) [b] | 151.8 | (118.7) | 155.6 | (110.1) | 167.4 | (120.8) | 170.0 | (105.9) |
| Earnings trend | 6.9 | (36.4) | 6.2 | (44.3) | 6.0 | (48.0) | 12.0 | (68.3) |
| Spouse earnings (if married) [a] | 198.0 | (138.8) | 195.5 | (135.0) | 204.7 | (153.5) | 209.3 | (338.0) |
| % work18 [d] | 49.4 | | 50.6 | | 61.3 | | 60.3 | |
| % work16-20 [d] | 40.6 | | 40.4 | | 54.2 | | 48.8 | |
| Earnings difference [c] | -41.6 | (96.0) | -29.9 | (104.1) | -26.6 | (92.2) | -25.5 | (103.7) |
| # observations | 318 | | 178 | | 426 | | 473 | |

a) Annual earnings in year of enrolment. All measures of earnings in this table are in NoK(1997)/$10^3$.
b) -1 and -2 refer to annual earnings one and two years prior to enrolment year, whereas +2 refers to earnings the second year after enrolment year.
c) Earnings(+2)-Earnings(-1)
d) Sick leave status evaluated the $18^{th}$ / $16^{th}$-$20^{th}$ calendar month after enrolment. Workers who do not receive sickness benefits, rehabilitation benefits or an increased disability pension (compared to an eventual pre-enrolment pension) during this/these month(s) are interpreted as returned to work.

Figure 1. Return to work for participants and non-participants in the BE-I.

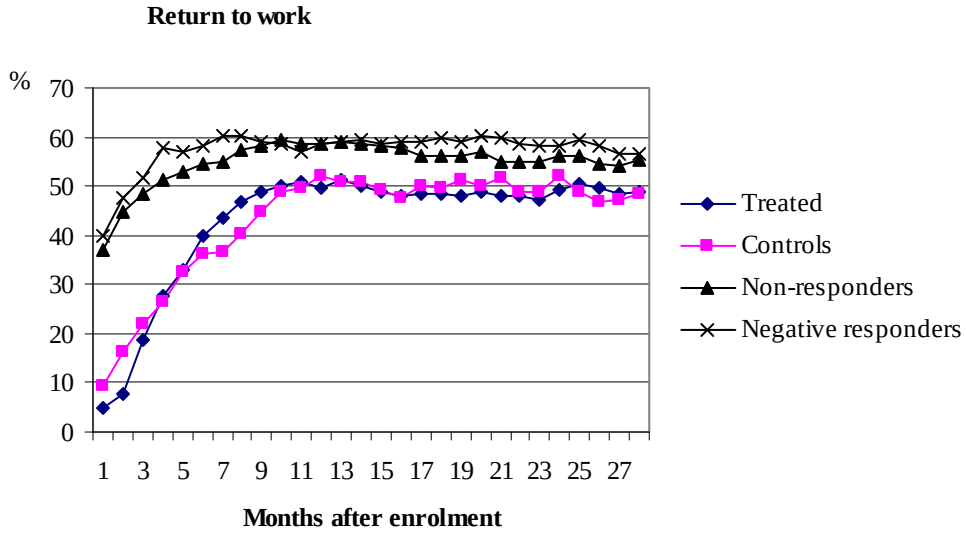


Table 2 Participants in BE-II, grouped according to treatment and pre-treatment probability for return to work (government employed workers in parenthesis).[a]

| Prognosis | Treatment | | | |
|---|---|---|---|---|
| | Ordinary | LTP | ETP | # obs. |
| Good | 70 | 46 | 26 | 136 (6) |
| Medium | 120 | 116 | 92 | 314 (14) |
| Poor | 73 | 60 | 51 | 178 (7) |
| # obs. | 249 (15) | 214 (8) | 165 (4) | 628 (27) |

a) Due to missing data on individual sickness spells, government employed workers, 27 in total, had to be excluded from the evaluation.

Table 3 Baseline characteristics of participants in BE-II, grouped according to treatment and prognosis for return to work, (Standard deviations in parenthesis)

| | Treatment | | | Prognosis | | |
|---|---|---|---|---|---|---|
| Variables | Ordinary | LTP | ETP | Good | Medium | Poor |
| Female (%) | 62.6 | 67.3 | 67.9 | 38.3 | 72.6 | 74.2 |
| Age (years) | 43.9 | 43.2 | 42.3 | 41.3 | 42.7 | 46 |
| | *(11.0)* | *(10.4)* | *(10.5)* | *(10.3)* | *(10.3)* | *(11.1)* |
| Marital status (%) | | | | | | |
| Single | 19.5 | 21.5 | 22.0 | 25.0 | 18.5 | 21.5 |
| Married | 62.5 | 61.0 | 63.0 | 59.0 | 64.5 | 60.0 |
| Previously married | 18.0 | 17.5 | 16.0 | 16.0 | 17.0 | 18.5 |
| Earnings(-2) [a)] | 184.7 | 175.9 | 181.2 | 216.8 | 168.5 | 174.7 |
| | *(73.1)* | *(66.2)* | *(87.3)* | *(85.7)* | *(65.4)* | *(73.5)* |
| Earnings(-1) [a)] | 190.1 | 180.8 | 193.3 | 218.2 | 179.0 | 180.1 |
| | *(63.0)* | *(67.4)* | *(99.6)* | *(82.3)* | *(59.3)* | *(89.6)* |
| Earnings trend [b)] | 6.162 | 5.642 | 12.150 | 1.357 | 11.507 | 5.329 |
| | *(36.070)* | *(39.293)* | *(50.172)* | *(51.046)* | *(33.264)* | *(43.979)* |
| Spouses earnings | 208.7 | 197.8 | 227.9 | 186.7 | 225.5 | 198.8 |
| | *(165.5)* | *(127.5)* | *(190.8)* | *(120.3)* | *(158.6)* | *(189.0)* |
| Diagnosis ICPC (%) [c)] | | | | | | |
| Back pain | 42.5 | 44.0 | 43.0 | 43.5 | 41.0 | 46.5 |
| Neck/shoulder pain | 33.5 | 33.0 | 34.0 | 36.0 | 34.0 | 30.5 |
| Generalized musclepain | 11.0 | 9.0 | 11.5 | 6.0 | 12.0 | 12.0 |
| Other | 11.0 | 14.0 | 12.5 | 14.5 | 13.0 | 11.0 |
| Recidivist (%) [d)] | 10.5 | 10.7 | 15.4 | 12.5 | 11.5 | 12.3 |
| # observations | 249 | 214 | 169 | 136 | 314 | 178 |

a) Annual NoK (1996) in year prior to enrolment (-1) and two years prior to enrolment (-2).
b) Earnings (-1)-Earnings(-2).
c) Diagnosis given by the GPs as cause for sick leave.
d) Sick-listed at least 2 months per year during the last two years for musculoskeletal pain.

Table 4 Participants in BE-II. Summary statistics on outcome responses for return to work and post-treatment earnings.

| | Months returned to work | | | | Post-treatment earnings [a] | | | |
|---|---|---|---|---|---|---|---|---|
| | # obs | Mean | Std.dev. | Diff. [b] | # obs | Mean | Std.dev. | Diff. [b] |
| Full sample | | | | | | | | |
| | 249 | 12.09 | 9.43 | | 224 | 137.59 | 118.67 | |
| | 214 | 12.89 | 9.44 | 0.80 | 187 | 127.10 | 103.39 | -10.49 |
| | 165 | 13.76 | 9.14 | 1.67* | 146 | 157.38 | 132.74 | 19.79 |
| Poor prognosis | | | | | | | | |
| Controls | 70 | 8.51 | 8.66 | | 65 | 107.56 | 98.07 | |
| LTP | 57 | 9.70 | 9.05 | 1.19 | 53 | 91.93 | 88.97 | -15.63 |
| ETP | 51 | 12.59 | 9.46 | 4.08** | 45 | 150.67 | 181.40 | 43.11 |
| Medium prognosis | | | | | | | | |
| Controls | 113 | 12.91 | 9.24 | | 96 | 124.49 | 106.52 | |
| LTP | 112 | 13.79 | 9.46 | 0.88 | 94 | 124.75 | 101.09 | 0.26 |
| ETP | 89 | 13.88 | 9.18 | 0.97 | 79 | 138.96 | 92.88 | 14.47 |
| Good prognosis | | | | | | | | |
| Controls | 66 | 14.49 | 9.58 | | 63 | 188.54 | 139.60 | |
| LTP | 45 | 14.67 | 9.10 | 0.18 | 40 | 179.21 | 107.61 | -9.33 |
| ETP | 25 | 15.72 | 8.32 | 1.23 | 22 | 237.25 | 112.36 | 48.71 |

Note: */** Statistically significant at the 10% / 5% level. Based on t-test (two sided) for equal means.
a) Annual earnings in second year after enrolment. NoK(1996)/$10^3$.
b) Difference in means between treatment and control group.

Table 5 Maximum likelihood probit estimates for the probability of return to work in at least 18 of the 4th – 28th months of follow up.

| | Full sample | | Screened to ETP | | Screened to LTP | |
|---|---|---|---|---|---|---|
| Variable [a)] | Coeff. | Std.Err. | Coeff. | Std.Err. | Coeff. | Std.Err. |
| Age | 0.0967 ** | *(0.0433)* | -0.0217 ** | *(0.0105)* | 0.1816 *** | *(0.0657)* |
| Age2 | -0.0012 ** | *(0.0005)* | | | -0.0020 *** | *(0.0007)* |
| Male | 0.2201 | *(0.1353)* | -0.2421 | *(0.3061)* | 0.3785 * | *(0.1978)* |
| Married | -0.3347 ** | *(0.1706)* | -0.2777 | *(0.3266)* | -0.1533 | *(0.2475)* |
| Previously married | -0.2596 | *(0.1819)* | 0.1053 | *(0.3367)* | -0.6315 ** | *(0.2678)* |
| Backpain | -0.0266 | *(0.1626)* | -0.2543 | *(0.3430)* | 0.2835 | *(0.2375)* |
| Neck/shoulder pain | -0.0671 | *(0.1673)* | -0.6122 * | *(0.3631)* | 0.4190 * | *(0.2427)* |
| Generalised muscle pain | -0.2816 | *(0.2174)* | -1.0297 ** | *(0.4904)* | 0.1628 | *(0.2999)* |
| Recidivist | -0.2341 | *(0.1630)* | -0.2523 | *(0.3565)* | -0.0157 | *(0.2336)* |
| Earnings [b)] | 0.0017 ** | *(0.0009)* | 0.0009 | *(0.0017)* | 0.0013 | *(0.0014)* |
| Earnings trend | -0.0015 | *(0.0014)* | -0.0023 | *(0.0036)* | -0.0003 | *(0.0024)* |
| Spouses earnings | 0.0008 * | *(0.0004)* | 0.0008 | *(0.0009)* | -0.0001 | *(0.0006)* |
| LTP | 0.1254 | *(0.1203)* | 0.2298 | *(0.2602)* | 0.1268 | *(0.1746)* |
| ETP | 0.2685 ** | *(0.1302)* | 0.4755 * | *(0.2609)* | 0.2238 | *(0.1873)* |
| Constant | -2.2725 *** | *(0.8698)* | 0.5465 | *(0.6126)* | -4.4388 *** | *(1.3302)* |
| Log-Likelihood | -410.9 | | -93.7 | | -203.1 | |
| LR $Chi^2$ | 34.14 | | 22.22 | | 27.50 | |
| Pseudo $R^2$ | 0.04 | | 0.11 | | 0.06 | |
| Treatment effect LTP (regression adjusted)[c)] | 0.046 | | 0.06 | | 0.059 | |
| Treatment effect LTP (unadjusted)[d)] | 0.044 | *(0.046)* | 0.063 | *(0.075)* | 0.057 | *(0.066)* |
| Treatment effect ETP (regression adjusted) [c)] | 0.104 | | 0.186 | | 0.098 | |
| Treatment effect ETP (unadjusted) [d)] | 0.103 | *(0.049)* | 0.192 | *(0.082)* | 0.101 | *(0.071)* |
| # observations | 628 | | 178 | | 314 | |

Note: * /** /*** statistically significant at the 10% / 5% / 1% level.

a) The base category includes single, non-recidivist female controls with other musculoskeletal diagnosis.

b) NoK (1996) / $10^3$.

c) ) = $E(P(Y_1=1|X_1)) – E(P(Y_0=1|X_0))$.

d) $(\sum T_i Y_{i1}/\sum T_i ) - (\sum(1-T_i )Y_{i0}/\sum(1-T_i ))$.

Table 6 Estimation of post treatment earnings parameters.

| | Full sample | | Screened to ETP | | Screened to LTP | |
|---|---|---|---|---|---|---|
| Variable [a)] | Coeff. | Std.Err. | Coeff. | Std.Err. | Coeff. | Std.Err. |
| Age | 11.336 *** | *(3.523)* | 16.809 ** | *(7.253)* | 8.091 * | *(4.684)* |
| Age2 | -0.147 *** | *(0.040)* | -0.200 ** | *(0.081)* | -0.106 ** | *(0.053)* |
| Male | 14.946 | *(11.112)* | 8.137 | *(25.922)* | 19.517 | *(14.616)* |
| Married | 6.636 | *(13.995)* | -16.585 | *(28.060)* | 17.032 | *(18.836)* |
| Previously married | 3.396 | *(14.992)* | 23.461 | *(30.484)* | -1.946 | *(19.868)* |
| Backpain | -26.282 * | *(13.450)* | -70.813 ** | *(30.465)* | -16.019 | *(17.617)* |
| Neck/shoulder pain | -28.180 ** | *(13.941)* | -74.649 ** | *(31.536)* | -7.869 | *(18.246)* |
| Generalised muscle pain | -40.309 ** | *(17.560)* | -96.784 ** | *(38.348)* | -18.022 | *(21.805)* |
| Recidivist | 9.163 | *(13.358)* | 69.817 ** | *(28.747)* | 10.602 | *(17.590)* |
| Earnings [b)] | 0.751 *** | *(0.068)* | 0.407 *** | *(0.149)* | 0.750 *** | *(0.109)* |
| Earnings trend | -0.460 *** | *(0.109)* | -0.001 | *(0.267)* | -0.182 | *(0.173)* |
| Spouses earnings | -0.016 | *(0.035)* | -0.050 | *(0.065)* | -0.009 | *(0.045)* |
| LTP | -6.427 | *(9.922)* | -10.673 | *(21.223)* | -1.567 | *(13.097)* |
| ETP | 17.791 * | *(10.697)* | 26.269 | *(22.494)* | 14.947 | *(13.672)* |
| Constant | -183.859 *** | *(71.407)* | -220.801 | *(147.535)* | -150.763 | *(94.502)* |
| Adjusted $R^2$ | 0.292 | | 0.198 | | 0.228 | |
| # observations | 557 | | 163 | | 269 | |

Note: * /** /*** statistically significant at the 10% / 5% / 1% level.

a) The basis category includes single, non-recidivist females with other musculoskeletal diagnosis and assigned to the control group.

b) NoK (1996) / $10^3$ .

Figure 2 Return to work for participants in BE-II. All participants.

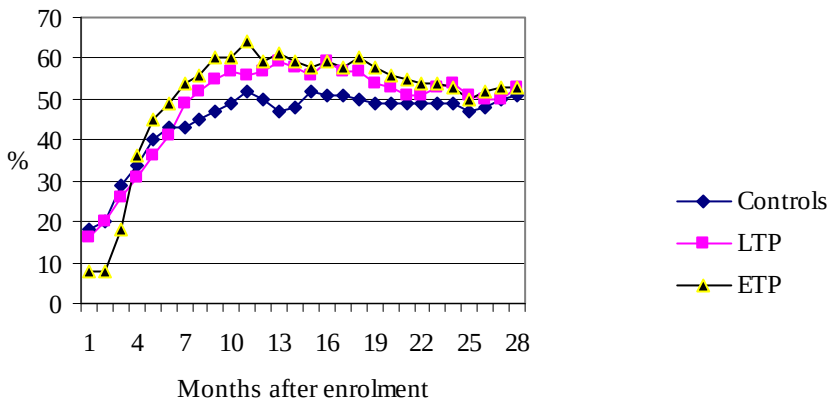

Figure 3  Return to work for participants in BE-II with poor prognosis.

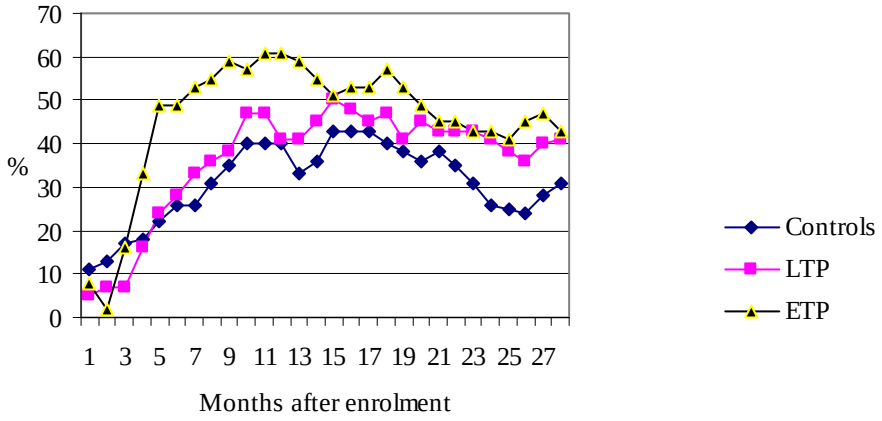


Figure 4  Return to work for participants in BE-II with medium prognosis.

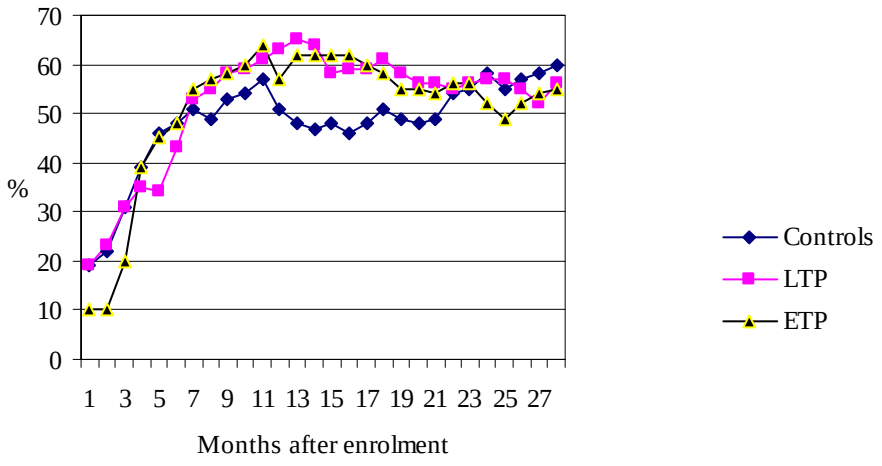

Figure 5 Return to work for participants in BE-II with good prognosis.