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# Comparison of Physician's Advice for Non-specific Acute Low Back Pain in Japanese Workers: Advice to Rest Versus Advice to Stay Active

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**Abstract: To assess the effects of physician's advice on non-specific acute low back pain (ALBP) in Japanese workers, existing data from a prospective, epidemiological study of Japanese workers were analyzed. Among workers who had had low back strain during the past year at baseline and responded to the 1-yr follow-up survey (n=475), those who obtained medical care (n=255) and received advice either to rest (n=68 for the rest group) or to stay active (n=32 for the active group) were examined. The rest group seemed to have a higher risk of ALBP than the active group after adjusting for age, gender, history of low back strain, type of physical activity at work, and severity of LBP during the past month at baseline (adjusted OR for the rest group vs. the active group: 3.65, 95%CI: 0.96–13.8). Compared to the active group, low back strain was more likely to occur repeatedly and to become chronic in the rest group. These findings suggest that advice to rest may not be better than advice to stay active for preventing future episodes of ALBP in Japanese workers, which is consistent with previous studies or guidelines for the management of ALBP in Western countries.**

**Key words:** Acute low back pain, Treatment, Advice, Rest, Japanese workers

## Introduction

Low back pain (LBP) is usually defined as pain localized between the costal margin and the inferior gluteal folds, sometimes with leg pain[1]. LBP is a common occupational health problem in many industrialized countries, is usually handled in primary care settings, and is an important cause of disability and incapacity for work[2]. Approximately 85–90% of LBP is diagnosed as non-specific LBP[1, 3]. Non-specific LBP is in some instances characterized as "recurrent"[4–7]: among individuals who have an episode of LBP, 24% to 87% will suffer recurrence within a year[8–12].

During the past two decades, the advice for LBP given by primary care physicians has changed. It is now generally recommended to minimize bed rest or even to stay active and to avoid bed rest, based on the results of clinical studies[13–15]. These results are reflected in guidelines for the management of non-specific acute LBP (ALBP) published in several industrialized countries[13, 16, 17]. The guidelines may help physicians choose more effective treatment strategies for reducing the risks of chronicity and disability associated with LBP[18].

However, in Japan, most hospital physicians or general practitioners (GPs) consider that rest until recovery is the best prescription for sudden-onset ALBP caused

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by an obvious trigger. Since this type of ALBP, known as *gikkuri-goshi* (sudden back pain) in Japanese or *hexenschuss* (blow from a witch) in German, may result from tissue injury, physicians often encourage patients to rest until recovery. Additionally, in Japan, a practical treatment strategy for ALBP is not yet well-established in therapeutic guidelines. This might lead to the current situation where the major treatment strategy is to rest until recovered. LBP is a common problem for workers across industrialized countries, but the different population groups do not perceive or respond to LBP in the same way due to racial, cultural, social, environmental or other differences[19]. Therefore, the effects of a physician's advice in a population of Japanese workers were examined.

In this study, the risk of recurrent sudden-onset ALBP caused by an obvious trigger was compared between Japanese workers who received advice to stay active and those who were given advice to rest until recovery. Analyses were performed in an exploratory manner, using existing data from the Japan epidemiological research of Occupation-related Back pain (JOB) study. The JOB study was a prospective, observational study, designed to identify the potential risk factors of LBP in Japanese workers. The study was a part of clinical research projects conducted by the Japan Labour Health and Welfare Organization related to the 13 fields of occupational injuries and illnesses including musculoskeletal disorders, mental health, and brain and heart diseases caused by overwork. The research projects were conducted to resolve occupational health issues and disseminate the research findings.

## Subjects and Methods

*Source of data*

Data from the baseline and 1-yr follow-up surveys of the JOB study were used for this analysis. The study was conducted prospectively from September 2005 on workers in or near Tokyo recruited from 16 workplaces in various occupational fields, and the data were collected by mail using a self-administered questionnaire. In the baseline survey, data were obtained from 5,310 workers out of 6,140 surveys distributed (response rate: 86.5%). The survey questions included the presence and severity of LBP and possible risk factors for LBP, such as individual characteristics or work-related ergonomic factors. Of the 5,310 who responded initially, 3,803 workers (follow-up rate: 71.6%) responded to the 1-yr follow-up survey, including questions relating to LBP or low back strain during the past year. Low back strain was defined as sudden-onset ALBP caused by an obvious trigger. LBP was defined as pain localized between the costal margin and the inferior gluteal folds. The study was approved by the medical/ethical review board of the Japan Labour Health and Welfare Organization. Workers who agreed to participate gave written informed consent.

For this analysis, workers who met the following criteria were selected: workers who had experienced low back strain during the past year at baseline; those who responded to the 1-yr follow-up survey; and those who obtained medical care and then received physician's advice either to rest until recovery or to stay active. The workers selected were divided into two groups by physician's advice: those who reported "receiving advice to rest as much as possible until recovery" in the questionnaire were defined as the "rest group", and those who reported "receiving advice to stay active as much as the pain allowed" were defined as the "active group".

*Statistical analysis*

Baseline characteristics considered as potential confounding factors were summarized descriptively for each group. Values were presented by either means and standard deviations (SDs) or frequencies and percentages. Between-group differences were evaluated using tested by Student's *t*-test for continuous variables and either the $\chi^2$ test or Fisher's exact test for categorical variables as indicated.

To examine the difference in the recurrence of low back strain between advice to rest and advice to stay active, odds ratios (ORs) and 95% confidence intervals (CIs) calculated by logistic regression were used. The OR of the rest and active groups at 1-yr follow-up was calculated by dividing the odds of the rest group by the odds of the active group (odds in rest group/odds in active group). Thus, an OR of >1 indicates the event was more likely to occur in the rest group than in the active group.

To reduce confounding, the ORs were adjusted for potential confounding factors using multivariate logistic regression. Potential confounding factors considered in the analysis were age, gender, history of low back strain[20], type of physical activity at work, and severity of LBP during the past month at baseline. History of low back strain was determined by asking whether subjects had experienced low back strain, excluding the past year at baseline. The history of low back strain variable was categorized into two groups: yes and no. The type of physical activity at work was categorized into three groups: non-manual handling (desk work), manual handling of <20-kg objects, and manual handling of ≥20-kg objects or work as caregivers. Severity of LBP during the past month was categorized into four grades regarding disability interfering with work[21]:

grade 0 as no LBP, grade 1 as LBP not interfering with work, grade 2 as LBP interfering with work, and grade 3 as LBP interfering with work and leading to sick-leave.

All statistical tests were two-tailed and conducted with a significance level of 0.05. All statistical analyses were considered exploratory. Statistical calculations were performed using STATA 9.0 and JMP 6.0.

## Results

*Baseline characteristics of the rest and active groups*

Among the workers who responded to the 1-yr follow-up survey, 475 (475/3,803; 12.5%) had low back strain during the past year at baseline. Of these, 255 workers (255/475; 53.7%) obtained medical care. A total of 100 workers who obtained medical care were selected for analysis: 68 workers who received advice to rest (the rest group), and 32 who received advice to stay active (the active group).

Table 1 summarizes the baseline characteristics of the workers selected for this analysis, including age, gender, history of low back strain, type of physical activity at work, and severity of LBP during the past month at baseline. There were no statistically significant differences between the two groups. However, in comparison to the rest group, there were more male workers in the active group, and the active group had less severe LBP during the past month at baseline.

For each category of the type of physical activity at work, the most common occupation was the same between the two groups: desk work in the non-manual handling category; sales in the manual handling of <20-kg objects; and nursing in the manual handling of ≥20-kg objects or work as caregivers. In addition, the proportions of workers who were prescribed medications such as non steroidal anti-inflammatory drugs (NSAIDs) or muscle relaxants, as recommended in the European and US guidelines, were 54.4% in the rest group and 43.8% in the active group. Both groups were almost similar in use of medications.

*Recurrence of low back strain*

Recurrence rate of low back strain in the rest and active group was 32.3% and 16.1%, respectively. Table 2 shows the OR and 95%CI of recurrence of low back strain. The workers who reported receiving advice to rest were likely to have a higher risk of recurrence than those who reported receiving advice to stay active (OR: 2.48, 95%CI: 0.84–7.38, $p$=0.102). After adjusting for the potential confounding factors, the risk was increased and was almost statistically significant (OR: 3.65, 95%CI: 0.96–13.8, $p$=0.057).

*Further analysis of the workers who had recurrence with low back strain*

Further analysis of the workers who had recurrence with low back strain was obtained by using the data collected in the 1-yr follow-up survey. The results are shown in Table 3. Compared to the active group, low

**Table 1. Baseline characteristics of the rest and active groups**

| Characteristic | Rest group (n=68) | Active group (n=32) | $p$[a] |
|---|---|---|---|
| Age (yr, mean, SD) | 42.6 (8.5) | 45.6 (10.0) | 0.13 |
| Gender (n, %male) | 50 (73.5) | 27 (84.4) | 0.23 |
| History of low back strain (n, %)[b] | 43 (65.2) | 22 (68.7) | 0.73 |
| Type of physical activity at work (n, %)[c] | | | |
| Non-manual handling (desk work) | 41 (62.1) | 24 (75.0) | |
| Manual handling of <20 kg | 13 (19.7) | 4 (12.5) | 0.45 |
| Manual handling of ≥20 kg | 12 (18.2) | 4 (12.5) | |
| Severity of LBP during the past month (n, %)[c] | | | |
| Grade 0: No LBP | 12 (17.6) | 11 (34.4) | |
| Grade 1: LBP not interfering with work | 36 (52.9) | 16 (50.0) | 0.11 |
| Grade 2: LBP interfering with work | 13 (19.1) | 5 (15.6) | |
| Grade 3: LBP interfering with work, leading to sick-leave | 7 (10.3) | 0 (0.0) | |

[a]$p$-values were calculated by Student's $t$-test for age and gender, the $\chi^2$ test for history of low back strain and type of physical activity at work, and Fisher's exact test for severity of LBP during the past month.
[b]The past year at baseline is excluded from the duration of history of low back strain.
[c]Total numbers may vary due to missing data. Percentages may not add up to exactly 100% due to rounding.
LBP, low back pain.

**Table 2. Recurrence of low back strain**

| Group | Number of workers[a] | | Odds of recurrence | Odds ratio (95%CI) | |
|---|---|---|---|---|---|
| | Recurrence of low back strain | No recurrence of low back strain | | Crude | Adjusted[b] |
| Rest | 21 | 44 | 0.477 | 2.48 (0.84–7.38) | 3.65 (0.96–13.8) |
| Active | 5 | 26 | 0.192 | $p$=0.102 | $p$=0.057 |

CI stands for confidence interval.
[a]Total numbers may vary due to missing data.
[b]Odds ratio were adjusted for age, gender, history of low back strain, type of physical activity at work and severity of low back pain during the past month.

**Table 3. Further analysis of the workers who had low back strain recurrence**

| Group | n[a] | Recurrence episodes | | Duration of low back pain | | Sick-leave during the past year at 1-yr follow-up |
|---|---|---|---|---|---|---|
| | | Only once | ≥2 times | <3 months | ≥3 months | |
| Rest | 21 | 9 (42.9%)[b] | 10 (47.6%)[b] | 15 (71.4%) | 6 (28.6%) | 5 (23.8%)[c] |
| Active | 5 | 4 (80.0%) | 1 (20.0%) | 5 (100.0%) | 0 (0.0%) | 1 (20%) |

[a]"n" indicates the number of those who had recurrence of low back strain in each group.
[b]Due to missing data, n=19.
[c]Due to missing data, n=20.

back strain seemed more likely to occur repeatedly and to become chronic in the rest group. Additionally, the rest group had marginally more workers who had taken sick leave than the active group.

## Discussion

In this study among Japanese workers, workers who were advised to rest until recovery had a higher risk for recurrence of low back strain compared to the workers who were advised to stay active as much as the pain allowed. The higher risk remained after adjustment for potential confounders. Additionally, among workers who experienced recurrent low back strain, low back strain appeared more severe in the rest group than in the active group. These findings suggest that advice to rest may not be better than advice to stay active for preventing future episodes of low back strain.

The findings of this study are consistent with previous studies or guidelines for the management of non-specific ALBP[14, 15, 18, 19, 22, 23]. However, it should be noted that the present study focused on sudden-onset low back strain, especially with obvious causes, while other studies dealt with ALBP of either sudden or gradual onset. In a previous study, LBP with gradual onset was found to be strongly associated with psychological symptoms, and sudden-onset LBP was more likely to involve physical exposures[24]. Thus, for gradual-onset LBP, it seems reasonable that advice to stay active, often promoting positive attitudes, should be preferred to advice to rest until recovery. In contrast, because sudden-onset LBP is often caused by physical exposures, rest until recovery appears to be more appropriate for treatment than staying active so that patients suffering sudden-onset LBP can keep away from any more damage on their back. However, interestingly, the present study suggests that staying active might be preferable even for low back strain.

It is quite difficult to explain why ALBP with an obvious trigger, often caused by injury, was more likely to recur in the rest group than in the active group. A few reports provide some ideas for consideration. A prospective longitudinal cohort study compared acute LBP patients choosing bed rest with those staying active as advised by their physicians. The result was that patients choosing bed rest were influenced by cognitive and emotional factors, especially pain catastrophizing and fear of injury, and they appeared to be more disabled after 1 yr[25]. The psychological stress of back pain may then result in long-term disability due to pain. Additionally, a previous biomechanical study showed that psychological stress is associated with increased spinal loading and injury risk[26]. Based on these results, it can be considered that a physician's advice to rest makes patients less positive and optimistic than advice to stay active, leading to an increase in psychological stress, which results in an increase in spinal loading and injury risk. Additionally, in vitro research has indicated that a reasonable amount of activity starting from the early stage of tissue injury can contribute

to effective healing[27, 28]. These results may explain in part why LBP recurrence occurs more often in patients choosing rest.

Several limitations of this study should be noted. First, since this study was based on a self-assessment survey, there is no way to ascertain how workers actually followed their physician's advice. Some consider "rest" to mean bed rest, while others consider it to mean sick leave. Similarly, staying active may also vary from no bed rest at all to a few days rest. Because of these facts, some bias may be introduced into the present comparison of rest versus staying active. Moreover, since the survey contained retrospective questions, some degree of misclassification is inevitable. The possibility for recall bias must be kept in mind. Additionally, although cognitive and emotional factors are recognized as important predictors of back pain[29], such factors as catastrophizing or fear-avoidance belief were not evaluated in the present study. In future research, it will be necessary to include these factors for the risk assessment of Japanese population. Finally, since this study was an exploratory secondary data analysis, the data selected were small and not perfectly homogeneous in the two groups. Although the differences were examined by adjusting for potential confounding factors, the findings should be interpreted with caution. For further examination, a larger representative sample size and a prospective comparative study are warranted.

Nowadays, as a treatment for ALBP, advice to discourage rest is a world-wide consensus among experts of LBP. Unfortunately, in the occupational and health fields in Japan, advice to take rest until recovery is still considered an effective therapeutic approach. However, from an industrial-hygienical point of view, we consider that advice to stay active should be preferred to advice to rest until recovery. With patient's conditions being carefully monitored, their workload should be reduced as needed.

## Conclusion

In a 1-yr self-assessment survey of Japanese workers, sudden-onset ALBP caused by an obvious trigger was more likely to be recurrent in those who received advice to rest until recovery as much as possible than in those who received advice to stay active as much as the pain allowed.

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