

Guidelines on Worksite Prevention of Low Back Pain

Labour Standards Bureau Notification No. 547

1. Introduction

A number of workers have been suffering from low back pain not only in specific types of industries but in other various types of industries and work. Low back pain is caused by the combination of various factors, which are categorized three major types: (1) motion factors affecting significant workload to the back dynamically or statically; (2) environmental factors affecting the back such as whole body vibration to the back, cold temperature, and falling on the floor or stairs, etc.; (3) personal factors including the difference of age, gender, body size, or muscle force, etc.; herniated disks, osteoporosis, or other previous or underlying diseases; mental stress.

Worksite prevention of low back pain requires health protection and promotion measures for workers as well as proper work management, working environment management, health care management and occupational health education to eliminate or reduce factors affecting the development of low back pain. The guidelines, therefore, address those points in detail. It is necessary for each establishment to take practical measures in the light of its type of work, based on the fundamental measures for low back pain prevention shown in the guidelines.

The guidelines indicate the measures for low back pain prevention in the workplace in general, followed by the basic measures by types of work in the supplement. The supplement is composed of the measures concerning five work types:

- (1) handling operations of heavy objects;
- (2) operations at accommodations for handicapped children or the like;
- (3) standing operations with significant workload to the back;
- (4) sitting operations on a chair or on the floor with significant workload to the back;
- (5) commercial vehicle operations or the like.

2. Work Management

(1) Automation or reduction of manual handling tasks

The excessive load should be reduced by whole or partial

automation or mechanization for the work that may contain excessive workload to the back. If that is difficult, adequate supplemental equipment or the like should be introduced for the reduction.

(2) Work posture and motion

The following points should be noticed to the employees:

- a. to avoid awkward work posture which contains workload to the back, such as half-seated, twisting, forward or backward bending with twist as far as possible. Work tables should be arranged properly in terms of height, angle so that the worker can easily fit straight to the tables. If awkward posture is inevitable, body weight should be supported by fixtures, or the like.
- b. to avoid fixed work posture for long periods in standing or sitting.
- c. to keep adequate work posture and to avoid sudden movement when the motion contains significant workload to the back.
- d. lifting, pulling, and pushing be done with their knees slightly bent, their breath prepared, and their abdominal muscle tensed.
- e. to avoid twisting their neck or back suddenly as far as possible, and to keep their eyes matched with the movement.

(3) Work manuals or the like

- a. Establishment of work manual

Work manuals should be prepared for the purpose of low back pain prevention including the following conditions for the work that may contain significant workload to the back, and be revised every time new equipment or facilities are introduced:

- i. to show time of the work, amount of the work, detailed procedures and the equipment to be used. Time of the work, amount of the work should be determined depending on types of work, handling weight, automation, etc., supplementary equipment, and the number, gender, muscle, age, and skills of workers.
- ii. to avoid continuous awkward work posture or

repetitive motion, to combine with other types of work, or to take other proper ways. Short break/rest during that work is recommended.

b. Others

- i. The speed of conveyers, etc., should be set properly in consideration of workers' height and muscle if the machinery determines the work speed of the workers concerned.
- ii. The amount of work should be less for night-time or other types of shift workers or flexible shift workers rather than for that of daytime workers with similar types of work.

(4) *Rest*

- a. Workers should be provided with rest facilities with space enough to lie down for rest as far as possible for the work that may contain excessive workload to the back.
- b. It is desirable that the room temperature of the facilities be adjusted for a relief of muscle tonus.

(5) *Others*

- a. Adequate supplemental devices such as waist supporters might be utilized for the work that may contain excessive workload to the back.
- b. Working shoes should fit to workers' feet. Heels or sandals should not be worn for the work that may contain excessive workload to the back.

3. Working Environment Management

(1) *Environmental temperature*

Appropriate temperature should be maintained for indoor workplaces. Over coats and, if possible, heaters should be provided for workers for the work in cold temperature.

(2) *Lighting*

Adequate lighting conditions should be maintained to allow clear vision of the workplace, corridors, stairs, and machinery.

(3) *Floor*

Floor should desirably be as flat as possible, non-slippery, elastic, shock absorbing and firm.

(4) *Work space*

Work space should be large enough to allow workers'

motion.

(5) *Installations*

The shape, size and layout of the installations and work tables should be arranged properly from ergonomic point of view including body movement, work posture, etc.

4. Health Care Management

(1) *Medical examinations*

Medical examinations on low back pain by a physician should be conducted for workers who will be usually engaged in the work that may contain excessive workload to the back including manual handling of heavy objects, care accommodations, before the placement (including replacement), and subsequently, at least once in every six months periodically.

a. Pre-placement medical examinations

Pre-placement medical examinations should be conducted about the following items so that the health conditions of the workers can be recognized and utilized as basic data for their health care management afterwards.

- i. investigation of the medical (on back pain) and work history of each worker.
- ii. examination of the presence of subjective symptoms such as low back pain, melosalgia, weakness in lower limbs and perception disturbance.
- iii. examination of the spinal column: abnormal posture, spinal column deformation, mobility and tenderness of spinal column, tension and tenderness of lumbodorsal muscle, and tenderness of acantha.
- iv. neurological examination: neurectasia test, deep tendon reflex, perception test and amyotrophia test.
- v. examination of the spinal column function: Clause and Weber test or its variation (on the function of abdominal or back muscle).
- vi. x-ray examination of lumbar: two directions with standing position in principal (if determined necessary by the physician).

b. Periodical medical examinations

- i. Periodical medical examinations should be conducted about the following items:
 - a) investigation of the medical (on low back pain) and work history of each worker;
 - b) examination of the presence of subjective symptoms such as low back pain, melosalgia,

myodynamic degradation in lower limbs and perception disturbance.

- ii. The medical examinations about the following items should also be conducted for workers determined necessary by physicians as the result of the medical examinations about the items shown in i. It is desirable that these examinations be conducted in succession to those in items shown in i:

- a) examination of the spinal column: abnormal postures, spinal column deformation, mobility and tenderness of spinal column, tension and tenderness of lumbodorsal muscle, and tenderness of acantha.
- b) neurological examination: neurectasia test, deep tendon reflex, perception test and amyotrophia test (add tests relating to psychogenic factors, if necessary).
- c) x-ray examination of lumber: if determined necessary by the physician.
- d) examination of motorial function: if determined necessary by the physician.

c. Measures based on the result of medical examinations

When judged on the basis of the result of the medical examinations on low back pain, necessary measures should be taken for maintenance of health of those individuals, thereby to improve the working methods, shorten the time of work, etc.

(2) *Warm-up exercise and exercise preventing low back pain*

a. Warm-up exercise

Warm-up exercise should be promoted as follows for workers' health protection including the prevention of low back pain:

- i. limber up at the beginning of the work of the day.
- ii. stretch lower limbs before specific work that may contain significant workload to the back.

The exercise should also be promoted, if necessary, at the end of the work of the day for a relief of muscle tonus and for better peripheral blood circulation.

b. Exercise preventing low back pain

Exercise preventing low back pain, which emphasizes low back pain prevention, should occasionally be promoted for workers who are usually engaged in the work that may contain excessive workload to the back including manual handling of heavy objects and care operations at accommodations. Exercise preventing low back pain is composed of 1) stretching of joints, 2) stretching of soft tissues and 3) muscle rebuilding, which should be selected for specific purposes.

5. Occupational Health Education or the Like

(1) *Occupational health education*

Occupational health education for low back pain prevention should be provided for workers who will be usually engaged in the work that may contain excessive workload to the back including manual handling of heavy materials, care operation at accommodations at the time of the placement, and subsequently when necessary. The occupational health education should include the following items at appropriate levels in the light of the working experience, knowledge of the workers:

- a. knowledge on low back pain.
- b. improvement of working environment, working methods, etc.
- c. how to use waist supporters.
- d. Warm-up exercise and exercise preventing low back pain.

The instructors for the education concerned should have sufficient knowledge and experience on the prevention of low back pain.

(2) *Others*

Low back pain prevention requires daily health promotion activities by each worker in addition to worksite measures for low back pain prevention. Therefore, it is recommended to provide workers, under the direction of industrial physicians, with appropriate guidance to well-balanced meals, adequate sleep and so on based on the proper recognition of muscle and health conditions of each worker.