ERGONOMICAL STUDY ON MANUAL MATERIAL HANDLING

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ABSTRACT

This paper is focused on the review of ergonomic tools and the ergonomic issues are present now. The main focuses on the ergonomic issues faced by the workers during Manual Material Handling (MMH) are explained. The studies show that the workers who had high ergonomic issues like Musculoskeletal Disorder while in Manual Handling such as lifting, lowering, pushing, pulling and any vibration generating activities. The main reason in the enhancing the ergonomic issues are due to the improper knowledge on work, less experience, careless, and awkward working posture. The studies also show that age wise and gender wise have the variation in the rate of ergonomic issues. Here we focused on the general ergonomic tools and software for accessing easily in an industry or workplace to get the ergonomic risk level in their works. The Ergonomic tools like RULA, REBA, NIOSH, SNOOK Table etc to be classified on the basis of the work task and also use NIOSH tool for the lifting purpose in an industry to find the level of risk with the help of Ergo Fellow 3.0 software, then provide necessary recommendation and instruction to the workers. The categorization of ergonomic tool will be helpful to select for particular task risk analysis and posture analysis. The project aims to do a risk analysis in lifting and lowering of the object in different sections of an industry with help of NIOSH calculator

Keyword *Manual Material Handling, Musculoskeletal Disorder, NIOSH, Lifting and Lowering*

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1. INTRODUCTION

The workers are largely affected by the work injuries whereas working, however mostly suffered from the pains, dislocations, muscle crunches and so on The main explanation for these problems were because of the improper operating posture, continuous work And repetitive motion. Employers are to blame for providing a secure and healthful work for his or her staff. Within the workplace, the amount and severity of MSDs ensuing from physical overexertion, and their associated costs, are often considerably reduced by applying engineering principles. Implementing an ergonomic method is effective in reducing the chance of developing MSDs in risky industries as numerous as construction, food processing, firefighting, workplace jobs, healthcare, transportation and warehousing. The project is aim to the ergonomic analysis of workers in business to search out the ergonomic problems and establish the remedial measurements to resolve such issues.

1.1 Manual Material Handling

Manual material handling is that the method of moving or supporting an object by physical force. Pushing, pulling, lifting and carrying are all samples of manual handling tasks. These tasks are often found in each workplace, whether or not you're in an office, on a construction project, a ranch or anyplace in between. Manual Material Handling poses many risks to staff. Strains and sprains are normally reported by employees who perform manual handling tasks. Backs, knees, hips, shoulders, elbows, necks: they're all body components vulnerable by manual handling tasks. The contributory factors for these risks vary, however embrace the weight, size, form and stability of the object; frequency and distance of the move; and also the body mechanics and overall health of the employee. Understanding the chance factors in your work from manual handling tasks is that the initiative in dominant these injuries.

2. TYPES OF ERGONOMIC IMPROVEMENTS

In general, ergonomic improvements are changes created to boost the fit between the strain of labor tasks and the capabilities of your workers. There are sometimes several choices for up a selected manual handling task. it's up to you to create educated decisions regarding that enhancements can work best for explicit tasks.
There are two types of ergonomic improvements:
1. Engineering improvements
2. Administrative improvements

2.1 Engineering Improvements

These embrace rearranging, modifying, redesigning, providing or substitution tools, equipment, workstations, packaging, parts, processes, products, or materials (see "Improvement Options").

2.1 Administrative Improvements

Observe however totally different staff performs identical tasks to urge ideas for up work practices or organizing the work. Then think about the subsequent improvements: Alternate serious tasks with lightweight tasks. Offer selection in jobs to eliminate or cut back repetition (i.e., overuse of the same muscle groups). Change work schedules, work pace, or work practices. Offer recovery time (e.g., short rest breaks). Modify work practices in order that staff perform work at intervals their power zone (i.e., higher than the knees, below the shoulders, and shut to the body). Rotate workers through jobs that use totally different muscles, body parts, or postures

3. METHODOLOGY

Manual handlings activities ought to be assessed so as to manage the chances of injury to the staff endeavor them. This risk assessment is totally different from the overall risk assessment introduced earlier during this course as a result of it focuses completely on the hazard of manual handling

In this project as per the methodology, first collect the literatures about the ergonomics and manual handling; then study and identify the engaged risk on the risk on manual material handling. The ergonomic evaluation is done by the software such as ergo fellow 3.0, ergo plus software. Before the using the software selects the particular ergonomic software and categorizes it on the basis of works carried by the workers.

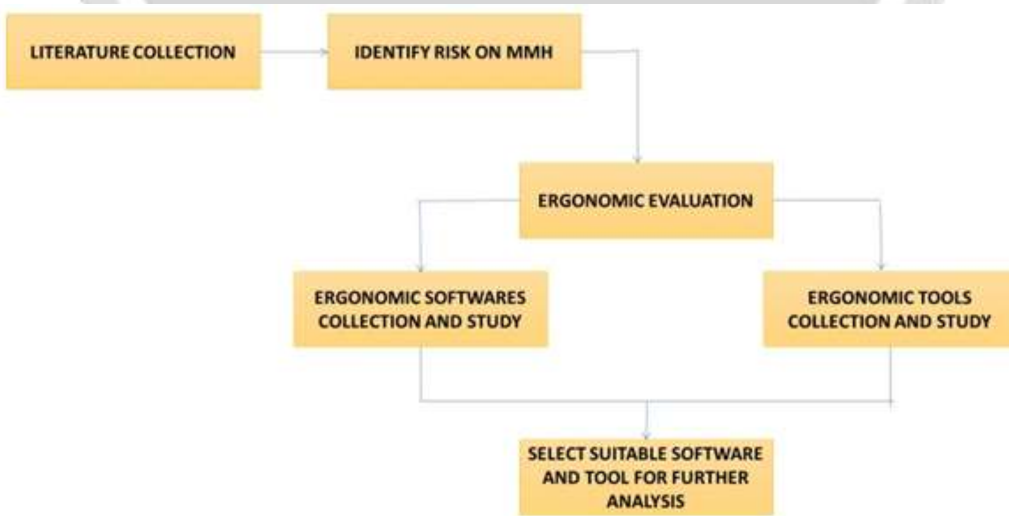

Fig -1 Methodology

3.1 Wisha Lifting Calculator

Developed by the Washington State Department of Labour and Industries and supported NIOSH analysis concerning causes of back injuries. This lifting calculator are often wont to perform engineering risk assessments on a good type of manual lifting and lowering tasks, and might be additionally used as a screening tool to spot lifting tasks that ought to be analysed more exploitation the more comprehensive NIOSH Lifting Equation.

To arrange for the assessment using the WISHA Lifting Calculator, you'll first ought to gather data regarding the job, interview supervisors and staff, and observe workers activity lifting and lowering tasks. choice of the lifting tasks to be evaluated ought to be supported the foremost troublesome and tight carrying or lowering tasks, love the heaviest objects raised from the most awkward positions (for example; below knees, higher than shoulder, and/or farthest reach).

If the duty involves lifting of assorted objects with many totally different we have a tendency tights and/or from a couple of different locations, we recommend:

1) Analyse the 2 worst case lifts—the heaviest object lifted, and also the lift performed within the most awkward posture.

2) Analyse the most normally performed lift, exploitation the frequency and period for all the lifting worn out a typical workday.

Here are some fast explanations and guidelines that you just can use to collect the required measurements for the WISHA Parameters

1) Weight – verify the particular Weight of the item being lifted. Often, you'll be {able to} acquire the load of the load from labelling on the object or from company production or shipping records. If necessary, use the closest scale within the facility to see the precise weight of any load being lifted. you'll sometimes be able to notice a scale in shipping and receiving departments. If the weight of the load varies significantly, you ought to obtain the typical and most weights lifted.

2) Vertical Hand Position – verify the Vertical Hand Position of the employee's hands relative to the knees, waist, and shoulders of the employee as they start to lift, lower, or place the item. The Vertical Location has four choice options; 1) Below Knee, 2) Knee to Waist, 3) Waist to Shoulder, or 4) higher than Shoulder

3) Horizontal Hand Position – verify the Horizontal Hand Position by menstruation the gap between the purpose projected on the ground directly below the mid-point of the hands grasping the object (load centre), and also the mid-point of a line between the toes. Note: This technique differs from the NIOSH Lifting Equation, that measures the gap between the mid-point of the hands (or load centre) mid-point of the within gliding joint bones. you'll choose one in every of the subsequent 3 options: 1) 0-7" = Near, 2) 7-12" = Middle, or 3) >12" = Extended 4) Frequency – verify the typical number of lifts per minute of the lifting task being evaluated, this can be the lifting frequency. This data can often be verified by requesting average production rates from a bunch leader, supervisor, or production manager. you'll also accomplish this by decisive the amount of lifts per minute throughout a brief one5-minute sampling or observation period. you'll choose the nearest of the 5 choices given within the calculator.

5) Period – verify the lifting duration as classified into one in every of 3 categories: 1) 1 hour or less, a pair of) 1 – 2 hours, or 3) 2 hours or more.
6) Twisting – verify the degree to that the body is needed to twist or flip during the lifting task. The twisting angle is that the quantity (in degrees) of trunk and shoulder rotation required by the lifting task.

Note: generally the twisting isn't caused by the physical aspects of the duty design, however rather by the worker exploitation poor body mechanics. If this can be the case, no twisting (0 degrees) is needed by the job.
If twisting is required by the look of the job, verify if theirs is a smaller amount than forty five degrees or quite 45 degrees. And don't forget to coach the work contestant to use correct body mechanics to avoid inessential twisting

3.2 NIOSH Lifting Equation

The NIOSH equation is used to evaluate Manual Material Handling risk in raising and lowering work tasks. As per the occupational health and safety, the revised NIOSH equation is used for the lifting and lowering task risk identification. The parameter in the NIOSH lifting equation RWL (Recommended Weight Limit) and LI (Lifting Index). The risk factor in the Lifting task is identified by the RWL and LI parameters.

This can be a tool often utilized by activity health and safety professionals for a lot of comprehensive assessment (when compared to the Washington State Lifting Calculator) of manual material handling risks related to carrying and lowering tasks within the workplace. the first product of the NIOSH equation is that the suggested Weight Limit (RWL), that defines the utmost acceptable weight (load) that almost all healthy staff might lift over the course of an eight hours shift while not increasing the chance of contractile organ disorders (MSD) to the lower back.

The Revised NIOSH Lifting Equation could be a tool utilized by activity health and safety professionals to assess the manual material handling risks associated with lifting and lowering tasks in the workplace. A lifting task is outlined because the act of manually grasping AN object with 2 hands, and vertically moving the item while not mechanical assistance. The NIOSH Lifting Equation considers many job task variables to see safe lifting practices and guidelines.

NIOSH Lifting Equation: RWL = LC (51) x HM x VM x DM x AM x FM x CM

The NIOSH Lifting Equation is wide accepted as valid within the field of occupational engineering, providing activity health and safety professionals an objective ergonomic risk assessment tool for manual material handling tasks. The NIOSH Lifting Equation could be a good way to spot ergonomic opportunities and place ergonomic improvement efforts, and it additionally provides an objective baseline from that you'll document engineering improvements. NIOSH Lifting Equation Outputs: the first product of the NIOSH equation is the Recommended Weight Limit (RWL), which defines the utmost acceptable weight (load) that almost all healthy staff might carry over the course of an 8-hour shift while not increasing the chance of contractile organ disorders (MSD) to the lower back. In addition, a Lifting Index (LI) is calculated to supply a relative estimate of the amount of physical stress and MSD risk related to the manual lifting tasks evaluated. A Lifting Index worth of 1.0 or less indicates a nominal risk to healthy employees. A Lifting Index larger than 1.0 denotes that the task is high risk for a few fraction of the population. Because the LI will increase, the amount of injury risk increases correspondingly. Therefore, the goal is to style all lifting jobs to accomplish an LI of 1.0 or less. Uses of RWL and LI: The RWL and LI are often wont to guide or engineer lifting task design within the following ways: Individual multipliers that verify the RWL can be used to determine specific weaknesses in the design. The LI can be used to estimate the relative physical stress and injury risk for a task or job. the upper the LI value, the smaller the share of staff capable of safely activity these lifting job demands. Therefore exploitation the LI, injury risk of 2 or a lot of job styles may be compared. The LI also can be wont to place engineering plan efforts. Parenthetically jobs can be hierarchical by LI and a bearing strategy can be enforced supported a priority order of the roles or individual lifting tasks.

NIOSH Equation Task Variables RWL = LC (51) x HM x VM x DM x AM x FM x CM The NIOSH Lifting Equation continuously uses a load constant (LC) of fifty one pounds, that represents the utmost suggested load weight to be raised below ideal conditions. From that beginning point, the equation uses many task variables expressed as coefficients or multipliers (In the equation, M = multiplier) that serve to decrease the load constant and calculate the RWL for that lifting task. Task variables required to calculate the RWL:

H = Horizontal location of the item relative to the body V = Vertical location of the object relative to the ground D = Distance the object is moved vertically

A = imbalance angle or twisting demand

F = Frequency and period of lifting activity

C = Coupling or quality of the staff grip on the item further task variables required to calculate

LI: Average weight of the objects raised most weight of the objects lifted further outputs of the NIOSH Lifting Equation:

The Frequency-Independent suggested Weight Limit (FIRWL) and also the Frequency- Independent Lifting Index (FILI) are additional outputs of the NIOSH lifting calculator.

The FIRWL is calculated by employing a frequency multiplier factor (FI) of 1.0 beside the opposite task variable multipliers. This effectively removes frequency as a variable, reflective a weight limit for a single repetition of that task and permits equal comparison to alternative single repetition tasks. The Frequency-Independent Lifting Index (FILI) is calculated by dividing the load raised by the FIRWL. The FILI will facilitate determine issues with occasional lifting tasks if it exceeds the worth of 1.0.

3.3 SNOOK TABLE

SNOOK Tables define style goals for varied lifting, lowering, pushing, pulling, and carrying tasks supported analysis by Dr. fodder SNOOK and Dr. Vincent Ciriello at the freedom Mutual analysis Institute for Safety. The tables offer weight/force values, for specific kinds of tasks that are deemed to be acceptable to an outlined proportion of the population. This can be done by scrutiny knowledge for every of the precise manual

handling tasks against the acceptable table. The chance Index is additionally calculated to supply a relative estimate of the amount of physical stress and MSD risk related to the tasks evaluated.
Risk Index = Actual Weight/Force demand ÷SNOOK Tables style Limit

A Risk Index worth of 1.0 or less indicates a nominal risk to healthy employees. A Risk Index larger than 1.0 denotes that the task is high risk for a few fraction of the population. because the LI increases, the level of injury risk will increase correspondingly. Therefore, the goal is to style all lifting jobs to accomplish AN LI of 1.0 or less. to arrange for the assessment exploitation the SNOOK Tables, you'll 1st ought to gather data regarding the job, interview supervisors and staff, and observe workers activity needed manual material handling tasks. choose the tasks to be evaluated supported the foremost troublesome and tight lifting, lowering, carrying, pushing, or pull tasks. For example, once evaluating lifting tasks, select tasks with the heaviest objects raised from the most awkward positions (below knees, higher than shoulder, and/or farthest reach); and when evaluating pushing and pull tasks, choose the foremost forceful task necessities or from low or high push pull points..

Task variables required to conduct assessments exploitation the SNOOK Tables:

Weight of Object Force demand Lift/Lower Distance Hand Distance (Horizontal Hand Position) Hand Height Push/Pull/Carry Distance Frequency Lifting/Lowering Zone choose the tasks to be evaluated supported the most troublesome and tight lifting, lowering, carrying, pushing, or pulling tasks. For example, once evaluating lifting tasks, select tasks with the heaviest objects raised from the most awkward positions (below knees, higher than shoulder, and/or farthest reach); and once evaluating pushing and pull tasks, choose the foremost forceful task necessities or from low or high push pull points. for every job task analysed, the authority will ought to collect relevant knowledge.
Measurements and data needed for assessments exploitation the SNOOK Tables embrace the following:

Weight: The weight of the item being lifted, lowered, or carried. Force: for every pushing and pulling task evaluated, you'll need to live the quantity of force required to urge the item moving (initial force) so measure the amount of force it takes to stay the item moving (sustained force). Lift/Lower Distance: The distance of travel of the hands whereas carry or lower taking place. Hand Distance (Horizontal Hand Position): The distance from the front of the body to the hands. this may commonly be the dimension of the item being handled unless the object is intentionally command far away from the body. If the load is raised away from the body, use the NIOSH Equation technique for decisive the horizontal location of the lift.

Hand Height: The vertical height of the hands on the object being pushed or pulled, or the peak of the hands once carrying a load. Push/Pull/Carry Distance: The distance the item being handled is pushed or pulled, or carried.
Frequency: The variety of lifts, lowers, pushes, pulls or carries expressed in terms of number of activities worn out ‘x’ seconds, minutes, or hours (as made public in tables and our calculator input fields).

Lift/lower zone: The space of the body within which the lift/lower starts and finishes respectively. note of the position of the hands once the employee has completed the lift/lower (floor to knuckle, knuckle to shoulders, or shoulder to overhead reach) once the task specific knowledge doesn't match the values within the calculator, choose succeeding highest table worth that's nearest to the particular task necessities. By choosing succeeding highest value for any of the precise criteria, a lot of conservative or protecting assessment can result.

3.4 Rapid Upper Limb Assessment (RULA)

McAtamney and Corlett in 1993, developed the Rapid Upper Limb Assessment Method (RULA) for the examination of the risk level based on upper limb disorder. The ergonomic evaluation of the work-related upper limb disorders in the workplace is carried out with the help of the RULA method. It also helps to the evaluation of the worker's adopted postures, workforce, and muscle action in the various task. The RULA is followed by body posture diagrams and three scoring table for the risk factor evaluation.

Step 1: Recording of the work posture for analysis;

Step 2: Body parts posture score by proper grouping system; Step 3: Calculate the total score and create the further action

Fig -2 RULA Worksheet

This diagnostic tool assesses biomechanical and bodily property load requirements of job tasks/demands on the neck, trunk and upper extremities. one page type is employed to judge needed body posture, force, and repetition.

Supported the evaluations, scores are entered for everybody region in section A for the arm and wrist, and section B for the neck and trunk. once the information for each region is collected and scored, tables on the shape are then wont to compile the chance issue variables, generating one score that represents the amount of MSD risk. The speedy higher Limb Assessment (RULA) was developed to “rapidly” assess the exposure of individual staff to engineering risk factors related to upper extremity MSD. The RULA ergonomic assessment tool considers biomechanical and bodily property load necessities of job tasks/demands on the neck, trunk and upper extremities.

3.5 Rapid Entire Body Assessment (REBA)

This tool uses a scientific method to judge whole body bodily property MSD and engineering style risks related to job tasks. one page type is employed to evaluate needed body posture, forceful exertions, style of movement or action, repetition, and coupling. A score is allotted for every of the subsequent body regions: wrists, forearms, elbows, shoulders, neck, trunk, back, legs and knees. once the information for each region is collected and scored, tables on the shape are then wont to compile the chance issue variables, generating one score that represents the amount of MSD risk. This engineering assessment tool uses a scientific method to judge whole body bodily property MSD and risks related to job tasks. worksheet is employed to evaluate needed or elect body posture, forceful exertions, style of movement or action, repetition, and coupling.

The REBA is an ergonomic tool used for the identification of risk factors responsive to the musculoskeletal by the body posture analysis. In Work-Related Musculoskeletal Disorder (WMSD), the risk on the entire body can be estimated with the help of the REBA method. The REBA and RULA are similar in design and have some dissimilarity in the case of external load acting and the workload coupling. The REBA analysis can be done manually with the help of the REBA form or use with the help of ergonomic software’s.

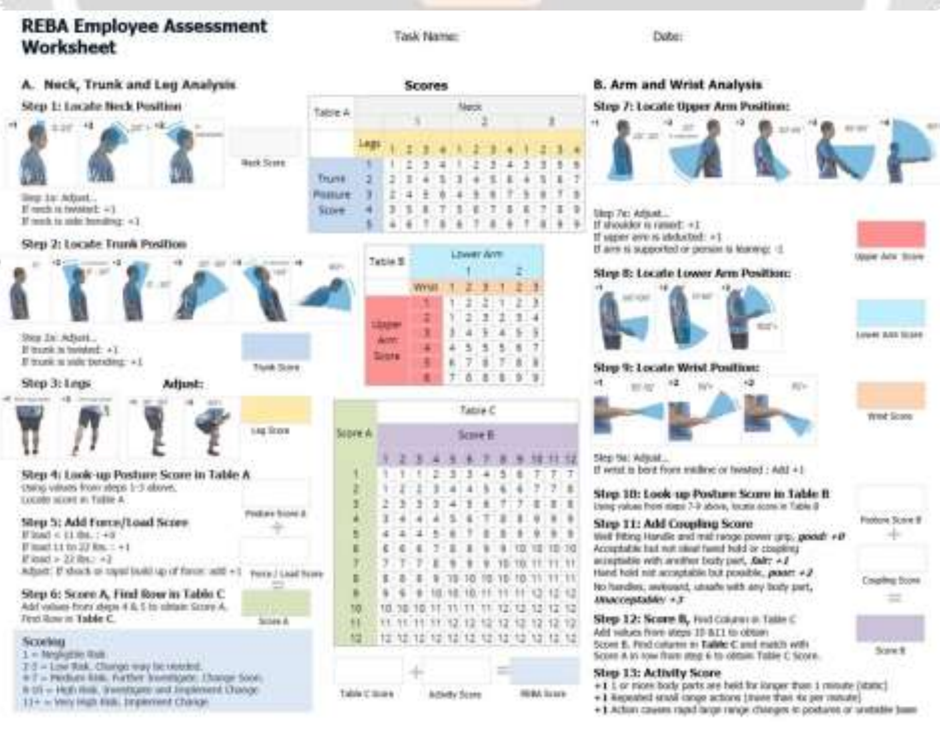

Fig -3 REBA Worksheet

The REBA was designed for simple use while not want for a sophisticated degree in engineering or overpriced equipment. You merely need the worksheet and a pen. On second thought, you most likely ought to end reading and finding out this guide, and that i suppose a writing board would facilitate as well. exploitation the REBA worksheet, the authority can assign a score for every of the subsequent body regions: wrists, forearms, elbows, shoulders, neck, trunk, back, legs and knees. once the information for each region is collected and scored, tables on the shape are then wont to compile the chance issue variables, generating one score that represents the amount of MSD risk.

3.5 Hand-Arm Vibration Calculator (HAV)

Though NIOSH has not issued a directive concerning HAV, the United kingdom developed tips below the management of Vibration at Work laws in 2005 exploitation the 2002 EU Physical Agents (Vibration) Directive. This regulation established and introduced vibration exposure action and limit worth. In these regulations, the action value was set at a vibration magnitude of 2.5 m/s2; limit value to 5 m/s2;.each values are A(8) values, which means they're average vibration magnitude values over the course of a 8-hour workday. This regulation is a decent guide to judge HAV exposure, and also offers suggestions with respect to reducing associated risks.

Hand-arm vibration (HAV) is vibration transmitted from a piece method into workers' hands and arms. It are often caused by in operation hand-held power tools, hand-guided equipment, or by holding materials being processed by machines. Multiple studies have shown that regular and frequent exposure to HAV will cause permanent adverse health effects, that are possibly to occur once contact with a vibratory tool or work process could be a regular and important a part of a person's job. Hand-arm vibration can cause a spread of conditions conjointly legendary as hand-arm vibration syndrome (HAVS), also as specific diseases such as white finger or Raynaud's syndrome, pistil tunnel syndrome and tendinitis. Vibration syndrome has adverse circulatory and neural effects within the fingers. The signs and symptoms embrace numbness, pain, and blanching (turning pale an d ashen). There are many various kinds of hand-held power tools and instrumentation which might place staff at increased risk of developing HAVS. a number of the a lot of common ones are: chainsaws impulse tools, ratchet screwdrivers concrete breakers, cut-off saws, hammer drills, hand-held grinders, impact wrenches, jigsaws, pedestal grinders, polishers, power hammers, power chisels, high-powered field mowers, powered sanders brush/weed cutters.

Step 1: Verify Vibration Magnitude the primary step is to see the Vibration Magnitude in m/s2 for every Tool / Process. There are 2 primary strategies that you just will use to get the vibration magnitude values for power tools: Use declared vibration values provided by tool makers as an estimate. Live in-use vibration magnitude with a vibration meter. getting the manufacturers declared vibration magnitude values: as a result of getting actual measurements crazy a vibration meter are often time intense and troublesome to perform, several evaluators use the declared values given by the manufacturer. The matter is that albeit the declared values are measured consistent with the relevant ISO standards, the measurements are taken in well- defined things that don't essentially represent the values for the precise work-situation. There are often appreciable variations between workplaces and operators. Which means that exposures supported declared values will solely be rough estimations of the values that an operator will be exposed to once exploitation the tool in real situations. Actual in-use vibration values measured with a meter can vary considerably from the values declared by the tool manufactures. In-use vibration is that the vibration the operator experiences when the tool is running during a real work state of affairs during a specific workplace. It depends not solely on the vibration made by the tool, however several alternative variables love the condition and quality of the inserted tool, style of product, the state of maintenance of the ability tool, the look of the process, the worker's posture and technique, and so on this can be the foremost correct technique to see the particular vibration magnitude exposure. Multiple tests ought to be performed accounting for all variables, and a mean of those tests should be used because the vibration value.

Step 2: verify Exposure period The Exposure Duration isn't the general time spent on a selected job. The Exposure period is simply the trigger time throughout that the hands are literally exposed to vibration. once asked, operators tend to overestimate the exposure duration. Therefore, it's higher to estimate the exposure duration by observation and menstruation of a sample period of typical work. Use a timer to see the typical duration or the "trigger time" needed to perform the work task when exploitation the tool being evaluated. Use most production rates to determine the amount of repetitions required per 8-hour shift. to see the Exposure period, multiply the amount of repetitions needed times the typical task period or trigger time for every tool.

Step 3: Enter knowledge into Calculator Insert input worth within the white areas, in one or a lot of the six Tool / method rows. quite one row is required once an employee is exposed to vibration from more than one tool or process at intervals identical 8-hour shift. once coming into the information the outputs can seem in the lightweight blue areas. To clear the calculator of all values, click on the Reset button.

Fig -4 Hand Arm Vibration Calculator

Calculator Inputs:
Vibration Magnitude – R.M.S. acceleration value in m/s2; for each Tool / Process.
Exposure Duration – total daily vibration contact time or "trigger time" for every Tool / Process.

3.6 Workplace Ergonomic Risk Assessment

The work engineering Risk Assessment (WERA), that is AN empiric tool was developed to supply a technique of screening the operating task quickly for exposure physical risk issue related to Work-related contractile organ Disorders (WMSDs)[1]. The WERA tool cowl the six physical risk factors together with posture, repetition, forceful, vibration, contact stress and task period and its involve the 5 main body regions (shoulder, wrist, back, neck and leg). it's a marking system and action levels which offer a guide to the amount of risk and wish for action to conduct a lot of careful assessments. This tool has been tested on its reliability, validity and usefulness throughout the event process. because the WERA tool could be a pen and paper technique that may be used with none special equipment, it can also be worn out any house of works while not disruption to the workforce.

WERA is the modified version of the REBA tool for the entire body assessment, also it is considered as an observational tool. The body pain and discomforts were reported with the WERA assessment because have a relationship among work-related musculoskeletal disorder. The WERA is an assessment system to provide proper guidance on risk to be evaluated during the work task. This assessment system has no special equipment for the evaluation, it is considered as paper and pen technique. The WERA assessment considers the five major body parts and six physical risk factors for the assessment of work tasks. The work task screening by the WERA method is followed by the stages.

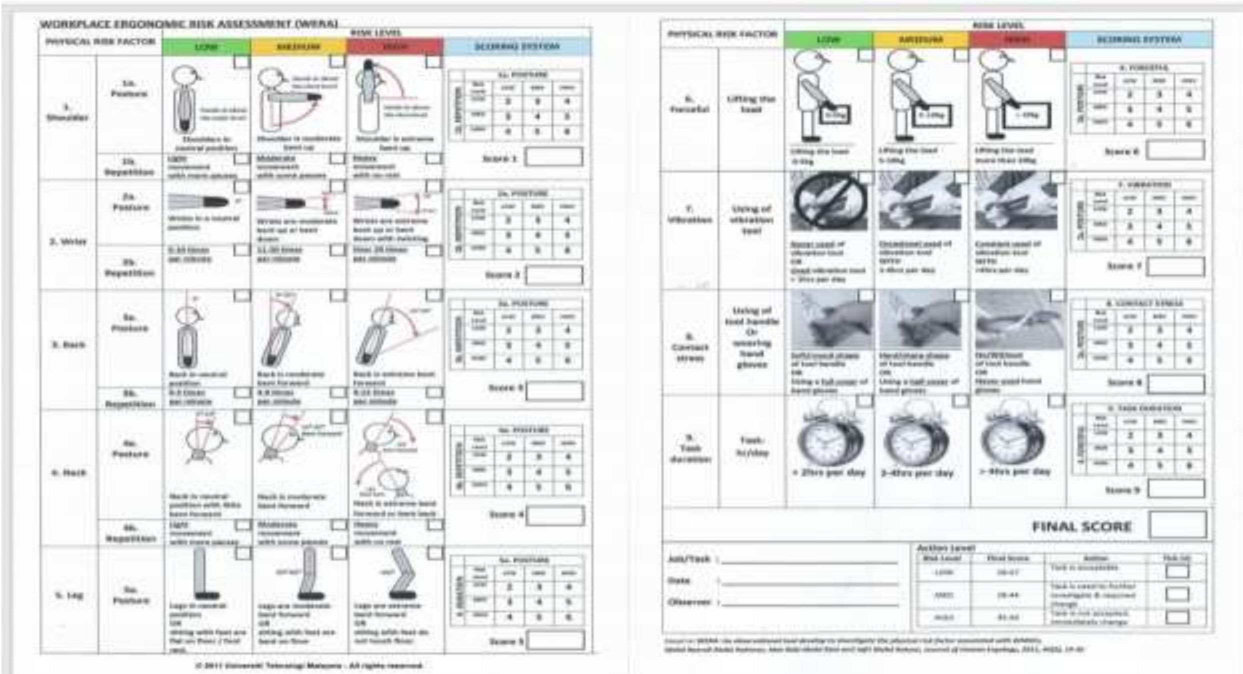

Fig -5 WERA Worksheet

Stage 1: Observe the work task;

Stage 2: Collect the relevant data;

Stage 3: Risk factor recording;

Stage 4: Scoring system;

Stage 5: Instruction and recommendations

4. CONCLUSIONS

Manual material handling is one of the risky work tasks which may lead to ergonomic health issues like musculoskeletal disorder. The studies show that the workers who had high ergonomic issues like Musculoskeletal Disorder while in Manual Handling such as lifting, lowering, pushing, pulling, and any vibration generating activities. The main reason for enhancing the ergonomic issues is due to the improper knowledge of work, less experience, carelessness, and awkward working posture. The manual lifting in the different sections of an industry analyzed by the NIOSH calculator and clearly showed that the lifting index in such works is greater than 1.0, so it portraits that the risk in manual lifting can be rectified by following proper instructions and a good working posture.

Manual material handling is one of the dangerous tasks in workstations. The high ergonomic issues may affect the person who does such works. From the different manual handling, the Lifting and lowering of an object is the main task includes high risk. During the manual lifting and lowering of an object, we should be careful to follow some instructions such as Avoid unnecessary bending, Keep the trunk and neck be straight, Avoid twisting, Keep the feet touch the floor properly, Avoid the stretching of hand and leg, Lift the weight maximum to the shoulder level, Keep the hand is closer to the leg position while lifting and also have to maintain a good working posture

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