

Reducing Risk Factors of Back Pains Among Surveying Engineering Using the a Graduated Tripod

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Abstract:

The low back pains are a main problem to the surveying engineer's society. Many of people will experience an event of back pain during their lifetime and might lead some of them to the disability. A survey was performed to discover out how to minimize the risk factors of operating for long periods of time that might cause back pains for surveyors. In the land surveying, the graduated tripod was used as an index for measuring the back pain problems that have been experienced by the surveyors. This study aims to develop a more effective teaching approach by modified tripod. The field work investigation indicated that there is a big difference between the normal tripod and scaliest tripod is used for all groups. Nonetheless, utilizing a modified scaliest tripod has shown minimize back pains and more accurate result.

Keyword: back pains, land surveying, scaliest tripod

Introduction:The low back pain has grown into a main community health problem in the world. The period frequency of low back pain is recounted to be as high as 84%, and the popularity of chronic low back pain is about 23%, with 11–12% of the population being restricted by low back pain (Adeyemi, H.O.,et al., 2015). Back pain is typically a self-limiting indicator to the costs at least 16 billion Americans dollars each year and disables 5.4 million people (Joish, Vijay N., and Diana I. Brixner., 2014).

The statement that a kind of the physical condition has such an important socioeconomic effect can probably be described by multipart psychological, societal, and legal factors (Frymoyer, J.W., 1988). The minimization and elimination of errors caused by instrumental imperfections or human operation is an important topic in surveying education. Nevertheless, despite the clear and definite behaviors of each surveying error, it is usually not easy to demonstrate on a blackboard their actual effects in field surveys (Shiu, R.S.,et al., 2011). To obtained results imply that the collimation angle appears as a rod-reading error and can be

eliminated by entering the corrections. Values of the accessory corrections (tripod and rod) for the effect of the temperature change indicate that they should be taken into account (corrections must be calculated and entered into the measurement results) in works with high accuracy. (Gučević, J., et al., 2016).

The land surveyor has to work for a long time using different instruments depending on the normal tripod in highly technical field that requires expertise in real estate property law, public records search, evaluation of historical survey evidence, land survey law, mathematics, statistics, measurement systems, planning regulations, and current computer technologies that made the back and neck pain is associated with high costs and accuracy for observation in the fieldwork measurement. Current epidemiological data propose that there is requisite to study from another point of view about the progression of back pain. The back pain is not simply acute or protracted but changes over time with frequent recurrences or exacerbations. (Balagué, F., et al., 2012) Likewise, back pain may regularly be part of a general pain problem instead of being isolated, local pain. While all studies have identified many individual, psychosocial and job-related risk factors for the beginning of back pain, their independent analytical value is usually low. Similarly, a number of factors have now been identified that may increase the risk of protracted disability but no single factor seems to have a strong impact (Maher, C., et al., 2017). Therefore, it is still uncertain what the most efficient strategy is for primary and secondary prevention (Chou, R. and Shekelle, P., 2010.). In general, actually a continuous process of studying that has used different ideas to figure out the best fit or technique to reduce the back pain symptoms where unfortunately the physical structures bodies of the surveyors will be disclosed to such pains. As known, continue bending for a long time in different weather conditions with sudden movements make the surveyors facing health troubles related to back pains. Nevertheless, these pains could be averted if the surveyors are not utilizing the normal tripod anymore. This study is actually a continuous process of studying that has used different ideas to figure out the best fit or technique to reduce the back pain symptoms where unfortunately the physical structures bodies of the surveyors will be disclosed to such pains. As known, continue bending for a long time in different weather conditions with sudden movements make the surveyors facing health troubles related to back pains. Nevertheless, these pains could be averted if the surveyors are

not utilizing the normal tripod anymore. Granting to the outcomes of this intensive study, it is better for the surveyors, to use a graduated tripod during long periods of surveying. It worked out that the land surveyor does not require to be in couching back position when a graduated tripod is used compared to other surveyors who are utilizing the normal tripod. Most significantly, the graduated tripod that has been investigated by the author keeps the users in a straight back position during the whole land surveying process. However, the land surveyors should mount the graduated tripod at the appropriate altitude, which is relative to the height of the surveyors.

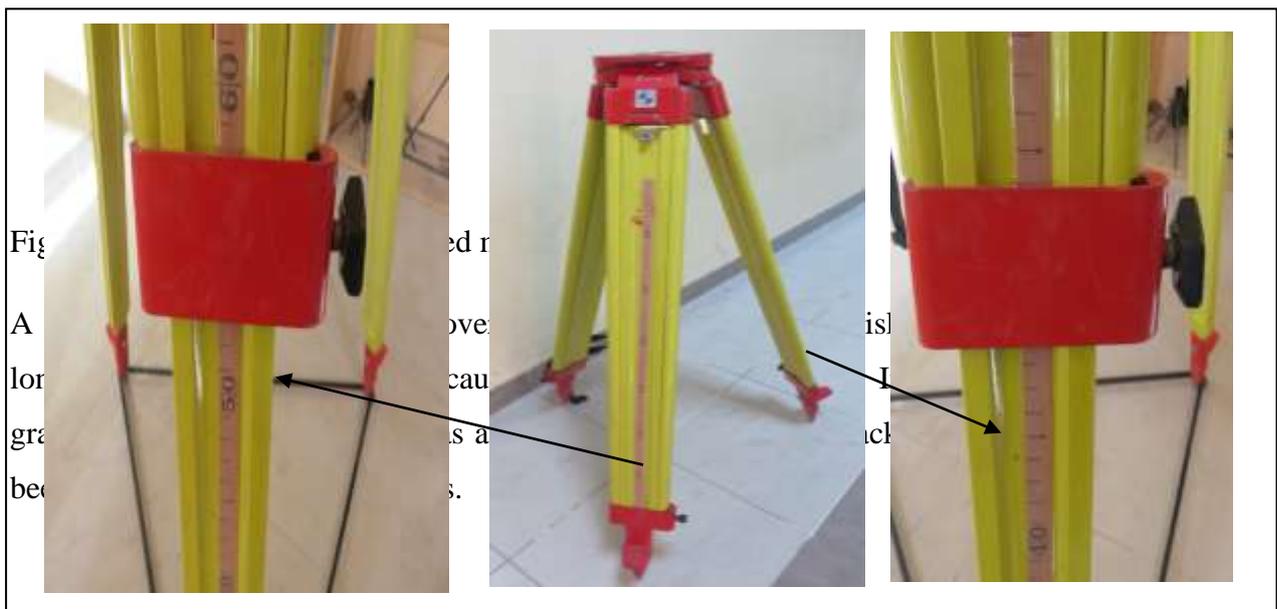
To modify the normal tripod to a graduated tripod, approximately one meter of the tape should be glued to the side of every single leg of the tripod or using a graduated centering rod for centering the instrument over a station and measure the height of the instrument (HI) see the attached pictures for using a graduated centering rod for setting up the instrument over a ground station and measuring the height of the instrument was designed by Kern of Aarau, Switzerland (line of sight)(Abby, D.G., 1965 ; Rüeger, J.M. and Brunner, F.K., 1981).



Figure 1: Using rod for centering the instrument on the tripod. The height of the instrument is measured by the graduated centering rod. The purpose of this study is to assess the risk associated with manual lifting in construction jobs and extend the tools as some first aid instructions which are equivalent with those available from land surveyor's social experts.

Methodology:

The overall design and layout play an important part in the integrity of any device improvements should have a proven being cost-efficient and environmentally sound on the land surveyors as well as ensure that all building and zoning, design criteria & codes are properly followed. The quality of the survey instrument also affects the overall value of the project. Building the structure right the first time and with high-quality materials ensures that you don't have to make costly repairs prematurely. Therefore to modify the normal tripod to scaliest tripod, approximately one meter of the tape should be glued to the side of each single leg of the tripod. The land surveying was done in three groups, each group receives a different personal height depending on the sight line for each surveyor. The procedure of land surveying has been done under different weather conditions for at least three hours using both normal and modified tripods see figure(1). The land surveyor should follow the suitable height established regulations and proper conduct with regard to using and sitting up the tripod these devices.



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Field Testing:

Employees surveying in many different challenging environments in rugged terrain, high-speed traffic, tools used, and construction equipment are some of the elements that typify survey hazards. The results of the conducted experiment are part of this research and point to the magnitude the variation in the inclination line sight, effects of relative change in the tripod height, and effects of relative change point. On the other hand the precision and the accuracy needs frequency for the Relative or absolute deformation survey. Accuracy required to detect the geometrical displacement and observation period frequency and more than the external effects or physical attributes of the deformable body of the land surveyors.

Result and Discussion:

The process of installing the surveying equipment for any person from a land surveyor is difficult to determine the appropriate height to reduce back pain as well as the effect of that pain on the accuracy of the readings in long measurement periods. The author presents a new, modified scaliest tripod that used in the field work. Which proves that there is no difference about the back pain when the normal tripod is used for all groups. Nonetheless, utilizing a modified scaliest tripod has shown no back pains at all, even if the field work is kept on for three hours or more for groups see the (Table 1, and 2).

Check with your intended engineering company to ensure that they won't cut corners when it comes to satisfying safety and reliability that is the goal of more company product the survey equipment. The land surveying was done in three groups, each group receives a different personal height depending on the sightline for each surveyors'. The procedure of land surveying has been done under different weather conditions for at least three hours using both normal and modified tripods. The results of the fieldwork proved that there is no difference in back pain when the normal tripod is used for all groups. Nonetheless, utilizing a modified graduated tripod has shown no back pains at all, even if the test is kept on for three hours or more for all groups see (Table 1, and 2). On other hand, the precision and the accuracy need frequency for the relative or absolute deformation survey. Accuracy required to detect the

geometrical displacement and observation period frequency and more than the external effects/physical attributes of the deformable-body of the land surveyors.

Table1: The table shows the results with normal tripod working

Groups lengths	Back pains	Time working	Precision	Accuracy
1.85-1.55	Very high	3:00	Good	Satisfied
1.55-1.25	Very high	2:57	Accept	Satisfied
1.25-1.00	Very high	2:55	Bad	Unsatisfactory

Table2: The table shows the result with modified scaliest tripod working

Groups lengths	Back pains	Time working	Precision	Accuracy
1.85-1.55	Very low	3:30	High Precision	Excellent
1.55-1.25	Very low	3:17	Very good	Very satisfied
1.25-1.00	low	3:05	Very good	Satisfied

Granting to the outcomes of this intensive study, it is better for the surveyors, to use scaliest tripod during long periods of surveying. It worked out that the land surveyor does not require to be in couching back position when the scaliest tripod is used compared to other surveyors who use the normal tripod. Most significantly, the scaliest tripod that has been investigated by the author keeps the users in a straight back position during the whole land surveying process. However, the land surveyors should mount the scaliest tripod at appropriate altitude which is relative to the height of the surveyors. Therefore, the adjustment to the legs of the tripod (scaliest tripod) helps the land surveyors with the installation process, each according to the height of the person, which makes the work for long periods easier and more accurate

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