ASSESSMENT OF THE POSTURAL DEVIATIONS IN PROFESSIONAL PHOTOGRAPHERS USING REEDCO POSTURE ASSESSMENT SCALE.

An Observational Study

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Abstract:

Many literature suggests that there is increase in the Postural deviations among different occupational workers such as frequent computer workers, policeman, etc. This postural deviations can lead to Work related muscular disorders which affects the skills of the working.As many wedding and freelancer photographers often spend many hours at there work places by adapting different positions with holding camera and other objects with them. That's why it is very important to check if holding a position and repetitive stress over the muscles may cause changes in the Normal body alignment. The job of the photographer requires a significant amount of time and efforts. This can lead to changes in the normal postural alignment. Many photographers may experience physical discomfort and limitations that can negatively impact their skills of photography. Thus the assessment of the Postural deviations among photographers is important.

Utilizing REEDCO POSTURE ASSESSMENT SCALE as a diagnostic tool in this study will provide an objective and quantitative measurement Postural deviations associated with Photographers. It will enhance the accuracy and reliability of the assessment.

Method – A convenient samples of 30 male photographers were taken for this study. The assessment of the posture was done by using Reedco Posture Assessment Scale from head to toe from posterior and lateral view.

Result - According to the tests performed there is a prevalence of piriformis muscle tightness in 73 truck drivers i.e., 58% out of 125 participating truck drivers and 52 participating truck drivers were not having tightness of piriformis muscle tightness i.e. 42% truck drivers.

Conclusion - According to the result 52% of participants have piriformis muscle tightness.

Result-Head region showed 6.6% had poor, 46.6% fair and 46.6 % good posture. Neck showed 10% poor, 70% fair and 20% good posture. Shoulder showed no participants had poor, 70 % fair and 23.3% good posture. Upper back showed 3.3% poor, 50% fair and 46.6% good posture. Trunk showed no participants had poor, 40% fair and 60% good posture. Abdomen showed 6.6% poor, 33.3 % fair and 60% good posture. Lower back posture showed 10% poor, 40% fair and 50% good posture. Spine showed 3.3% participants had poor, 23.3% fair and 73.3% posture. Hip showed 3.3% poor, 16.6% fair and 80% good posture. Ankle showed 20% poor, 76.6% fair and 6.6% good posture.

Index Terms – REEDCO scale, Professional photographer, Posture .

I. INTRODUCTION

A photographer {the Greek(phos), meaning "light", and (graphê), meaning "drawing, writing", together meaning "drawing with light"} is a person who makes photographs. Photographers can be amateur or professional ones.

A professional photographer may be an employee, for example of a newspaper, or may contract to cover a particular planned event such as a wedding or graduation, or to illustrate an advertisement. Others, like fine art photographers, are freelancers, first making an image and then licensing or making printed copies of it for sale or display.[1] Some workers, such as crime scene photographers, estate agents, journalists and scientists, make photographs as part of other work. Photographers who produce moving rather than still pictures are often called cinematographers, videographers or camera operators, depending on the commercial context.

Posture is defined as the attitude assumed by the body either with support during the course of muscular activity, or as a result of the coordinated action performed by a group of muscles working to maintain the stability.[3]

There are two types:

1. Dynamic posture is how you hold yourself when you are moving, like when you are walking, running, or bending over to pick up something. It is usually required to form an efficient basis for movement. Muscles and non-contractile structures have to work to adapt to changing circumstances.
2. Static posture is how you hold yourself when you are not moving, like when you are sitting, standing, or sleeping. Body segments are aligned and maintained in fixed positions. This is usually achieved by co-ordination and interaction of various muscle groups which are working statically to counteract gravity and other forces.[4]

It is important to make sure that you have good dynamic and static posture Poor posture can be bad for health. Slouching or slumping over can misalign your musculoskeletal system, cause neck, shoulder, and back pain, decrease your flexibility, affect your balance and increase your risk of falling, make it harder to digest your food, make it harder to breath. [5]

A study has been done over the work-related musculoskeletal disorders among the male camera man which suggests, as cameramen tend to work very irregularly and change their working position also their work requires carrying heavy objects on the shoulder as a part of their job, maintaining the same posture for a long time. Furthermore, they sometimes have to work several hours without taking break depending on their recording schedules, which are also known as one of the risk factors for WRMSDs.[6]

Literature suggests relationship between posture and pain. There are many theories that bad posture is a contributing factor in low back pain, some studies have shown that improved posture and postural control can have a positive effect on pain.[7,8,9,10]

Body posture refers to the position of a person's body in space, the alignment of body parts in relationship to one another and to the environment at one point in time, and is influenced by each of the body's joints.

Postural control refers to building up posture against gravity and to ensuring that balance is maintained. It enables postural stabilization during voluntary movements and recovery of balance after disturbance. Postural control also constructs a reference frame for proprioception, i.e., the perception of joint angles and muscle tensions, of movement, balance and posture.

When less attention is paid to the physical damage caused by holding a certain position over time causes holding injuries technically called excessive positioning injuries.[11,12,13] Swelling in joints, physical stiffness and discomfort, headaches, jaw pain, and chronic neck or low back pain are all signs of excessive positioning injuries.[11] Standing for more than half a day in an awkward position increases the likelihood of having musculoskeletal problems.

The Reedco posture score (RPS) (REEDCO, 1974) is a standard posture assessment and graded in the coronal and sagittal views in head-to-foot sequences.[14]
The RPS is simple, easy, and inexpensive to use. The RPE has extensively used in several population to assess the posture. The scale includes client name, sex, age, center, date and the name of physiotherapist. The score is measured in Good -10, Fair -5, Poor – 0 and the assessment of hands, shoulders, spine, hips, ankle, neck, upper back ,trunk, abdomen, low back is done. The total score is out of 100.

II. METHODOLOGY

This Observational study is conducted on 30 subjects who are professional photographers. Ethical committee clearance was obtained and permission was taken from the department. Written consent was taken from the subjects who fulfilled the inclusion criteria and exclusion criteria. The subjects were informed about the procedure of REDCO posture assessment test for assessment of any postural deviation.

II.A INCLUSION CRITERIA

- Male photographers.[15]
- Photographers with certified course.[15]
- Photographers with at least 1year of work experience.[15]
- Photographers 22- 40 years of age.[15]

II.B EXCLUSION CRITERIA

- Any recent fractures or dislocation.[15]
- Recent surgeries. [15]
- Any musculoskeletal deformities and contractures.[15]
- Systemic Inflammatory conditions like Rheumatoid Arthritis, Fibromyalgia, Ankylosing spondylitis,etc [15]

II.C OUTCOME MEASURES

REEDCO POSTURE ASSESSMENT SCALE. (Inter rater reliability is alpha coefficient 0.899-0.915)13 (test -retest reliability ICC 0.81-0.95)14

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III. STATISTICAL ANALYSIS

Data was collected and analysed.

IV. RESULTS

GRAPH 1

AGE WISE DISTRIBUTION
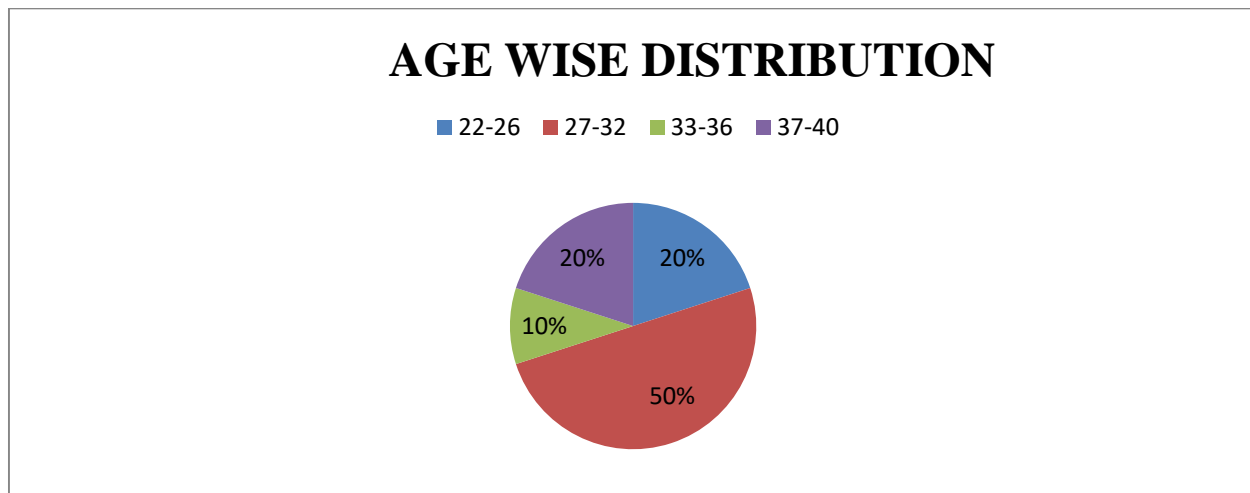
■ 22-26 ■ 27-32 ■ 33-36 ■ 37-40

AGE GROUP	22-26	27-32	33-36	37-40
POPULATION %	20%	50%	10%	20%

INTERPRETATION : Graph shows that 20%(6) subjects are between 22-26 years, while 50%(15) are

between 27-32, 10%(3) are between 33-36 and 20% (6) are between 37-40 years.

GRAPH 2
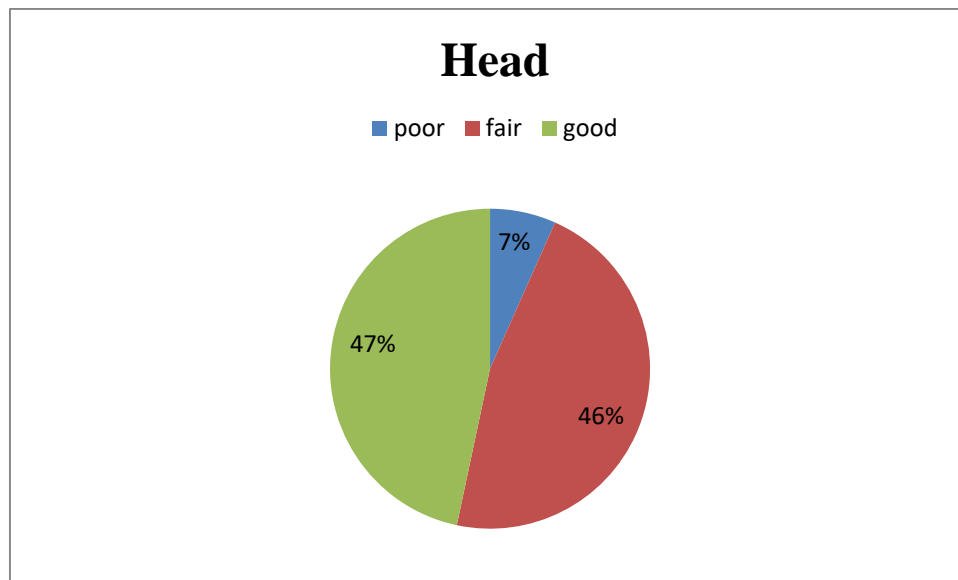
POSTURE	POOR	FAIR	GOOD
HEAD	6.6%	46.6%	46.6%

INTERPRETATION- Head region showed that 6.6 % population had poor (head is twisted or turned to one side markedly),46.6 % had fair (twisted or turned to one side slightly) and 46.6% population had good (head erect) posture.

GRAPH 3

POSTURE	POOR	FAIR	GOOD
NECK	**10%**	**70%**	**20%**

INTERPRETATION - Neck region showed that 10% participants had poor (neck markedly forward and chin markedly out), 70 % fair (neck slightly forward and chin slightly out) whereas 20% good (erect neck, chin in, head in balance directly above shoulders) neck posture.
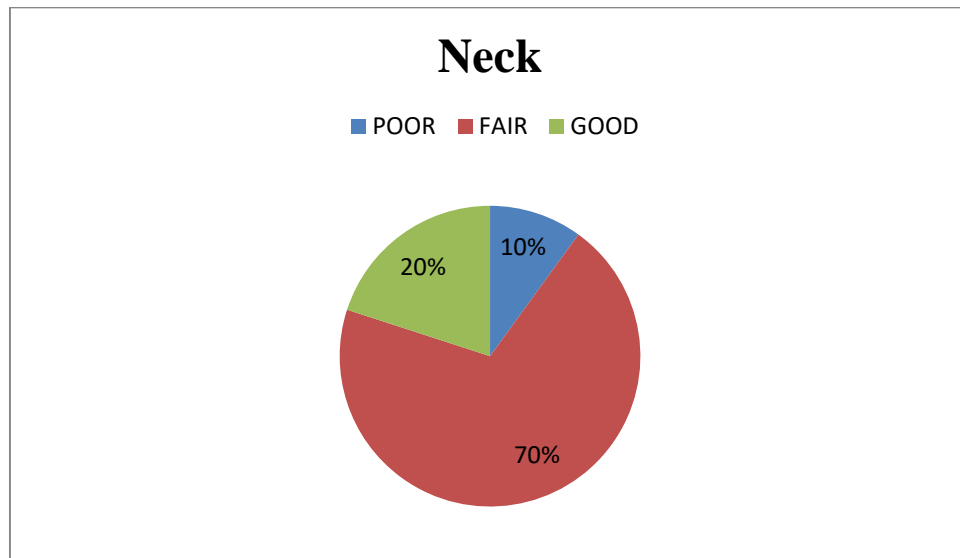
GRAPH 4
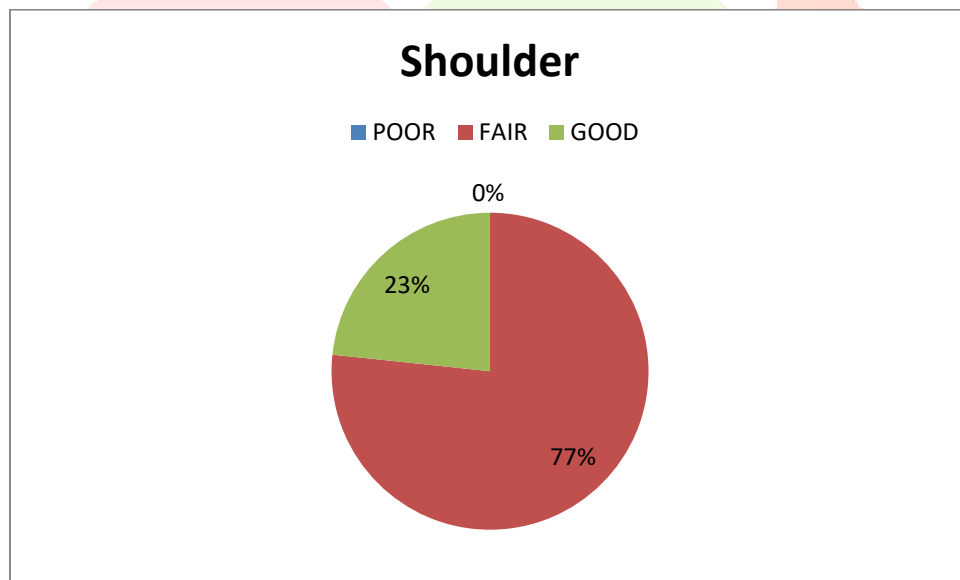
POSTURE	POOR	FAIR	GOOD
SHOULDER	**0**	**76.6%**	**23.3%**

INTERPRETATION -Shoulder assessment showed no participants were having poor (one shoulder markedly higher than other), 76.6% fair (one shoulder slightly higher than other) while 23.3% good shoulder posture (both shoulders horizontally at same level).

GRAPH 5

Upper Back

■ POOR ■ FAIR ■ GOOD

3%

47%

50%
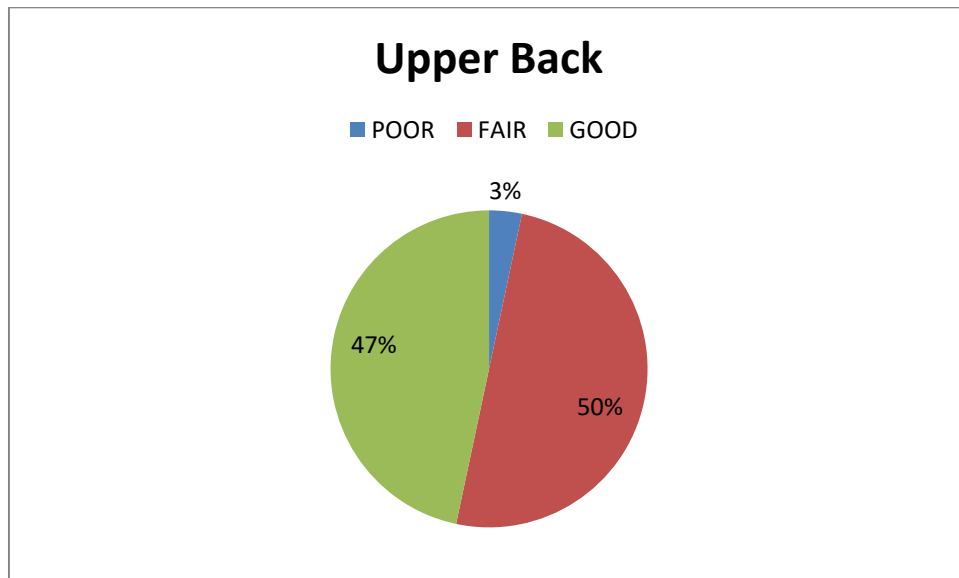
POSTURE	POOR	FAIR	GOOD
UPPER BACK	3.3%	50%	46.6%

INTERPRETATION -Upper back highlighted 3.3% population with poor (upper back markedly rounded), 50 % with fair (upper back slightly more rounded or flattened) whereas 46.6% with good upper back posture (upper back normally rounded)

GRAPH 6

Trunk

■ POOR ■ FAIR ■ GOOD

0%

40%

60%
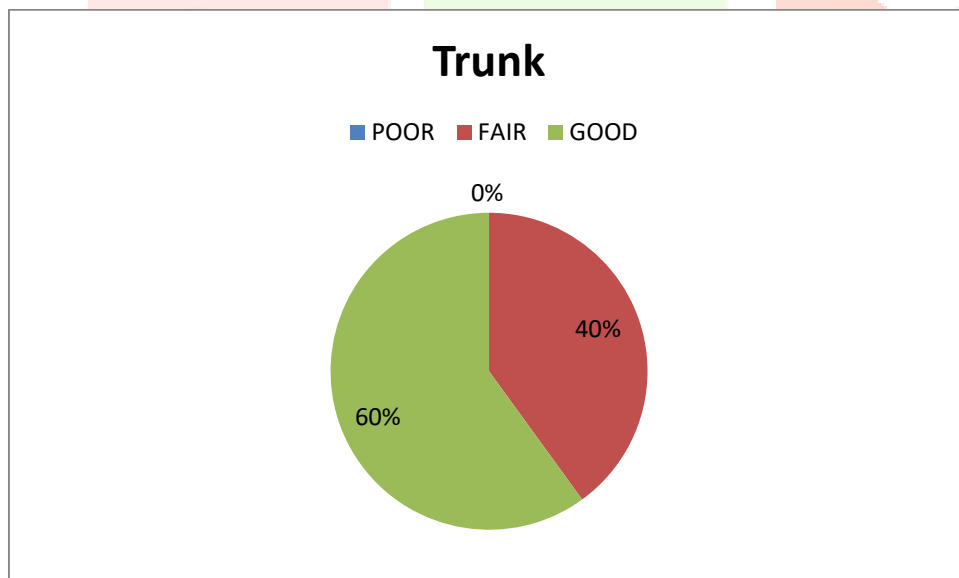
POSTURE	POOR	FAIR	GOOD
TRUNK	0%	40%	60%

INTERPRETATION -Trunk posture assessment described that no participants were of poor (trunk markedly inclined to rear-marked posterior pelvic tilt), 40% of fair (trunk slightly inclined to rear- slight posterior pelvic tilt) and 60% of good (trunk erect) trunk posture.

GRAPH 7

Abdomen

POOR ■   FAIR ■   GOOD ■

7%

33%

60%
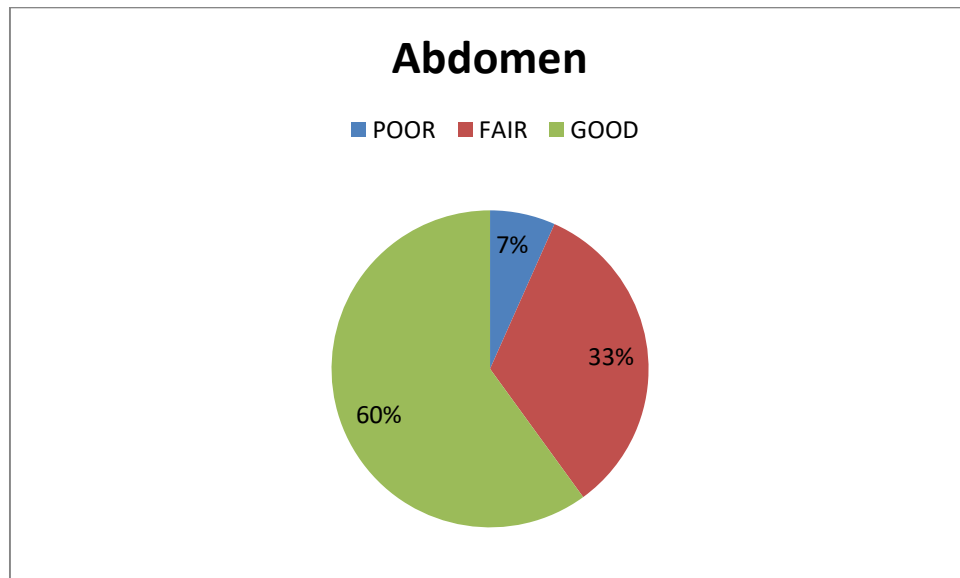
POSTURE	POOR	FAIR	GOOD
ABDOMEN	**7%**	**33%**	**60%**

INTERPRETATION -Abdominal posture assessment showed that 6.6% participants were with poor (abdomen is protruding and sagging), 33.3% with fair (abdomen is protruding) and 60.0% with good (abdomen was flat) abdominal posture.

GRAPH 8

Low Back

POOR ■   FAIR ■   GOOD ■

10%

40%

50%
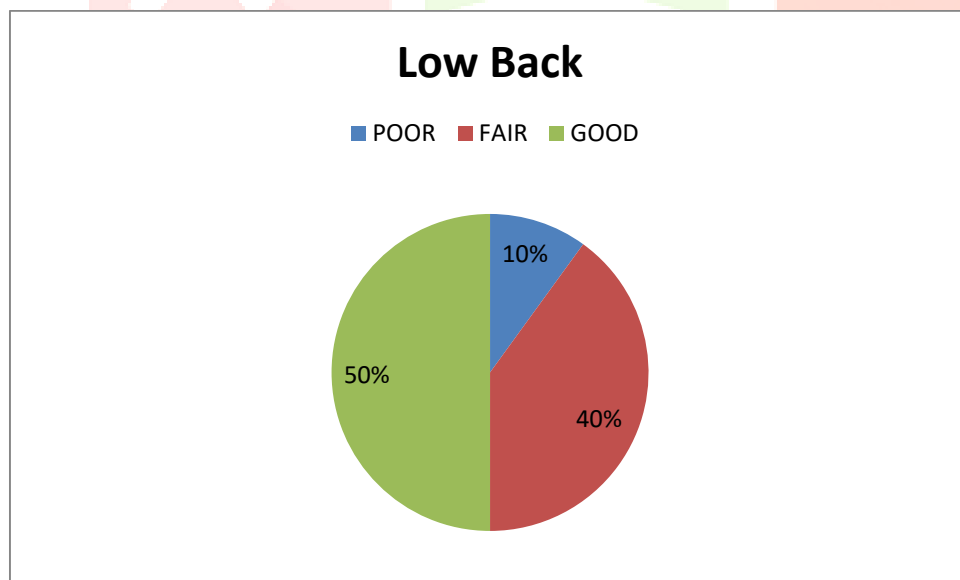
POSTURE	POOR	FAIR	GOOD
LOW BACK	**10%**	**40%**	**50%**

INTERPRETATION- Lower back was also observed for postural changes, results of that observation evaluated that poor posture (lower back markedly hollow/flattened- marked anterior pelvic tilt) was among

10% participants, fair posture (lower back slightly hollow/flattened- slight anterior pelvic tilt) was in 40% participants whereas good posture (normal lower back curve) was in 50% participants.

GRAPH 9
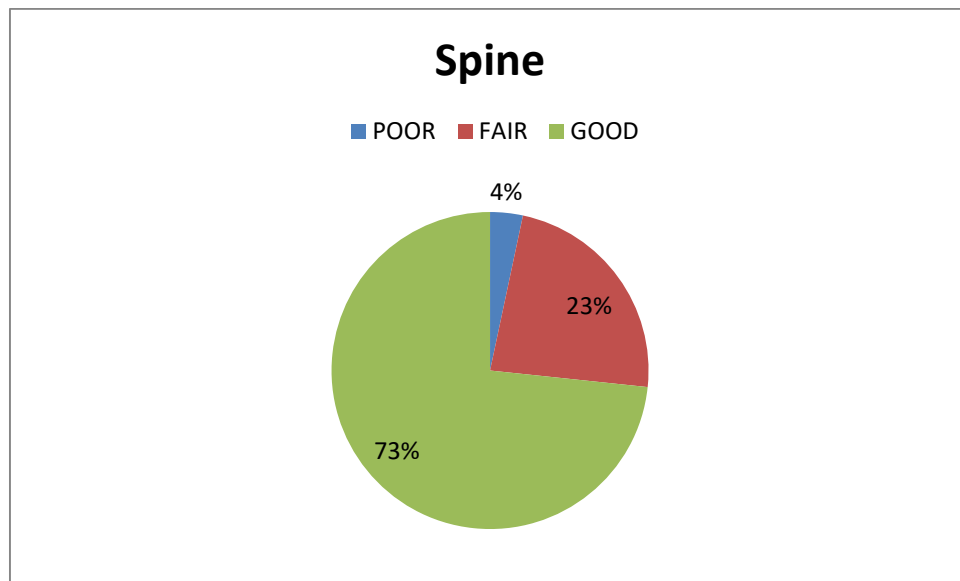
POSTURE	POOR	FAIR	GOOD
SPINE	4%	23%	73%

INTERPRETATION -When spine was assessed, it interposed that only 3.3% participants among all had poor posture (spine markedly curved laterally), 23.3 % were having fair posture (spine slightly curved laterally) while good posture (straight spine) was inspected in 73.3% participants.

GRAPH 10
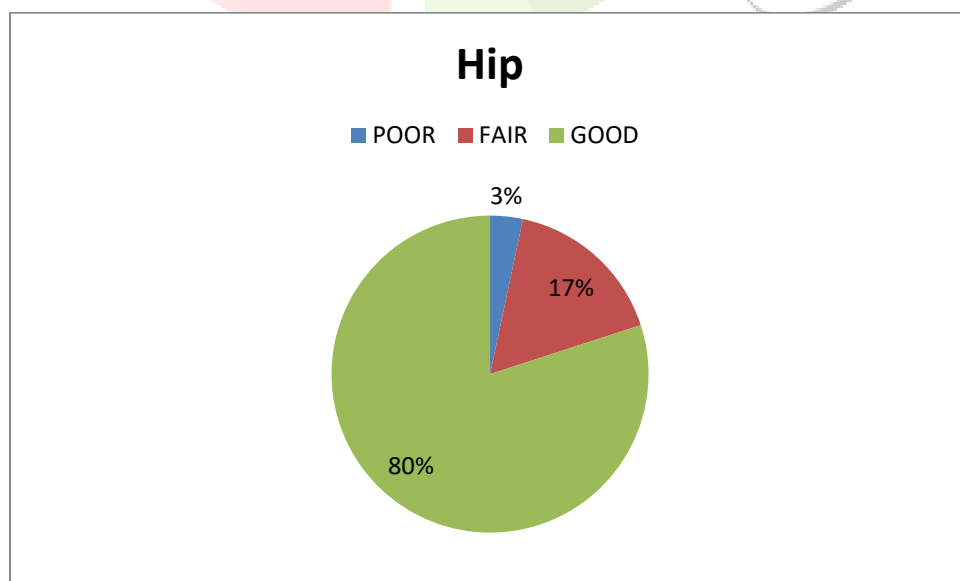
POSTURE	POOR	FAIR	GOOD
HIP	3%	!7%	80%

INTERPRETATION- Hip assessment for posture gave results that 3.3% participants had poor (one hip markedly higher than other), 16.6% fair (one hip slightly higher than other) whereas 80% good posture (both hips horizontally at same level)
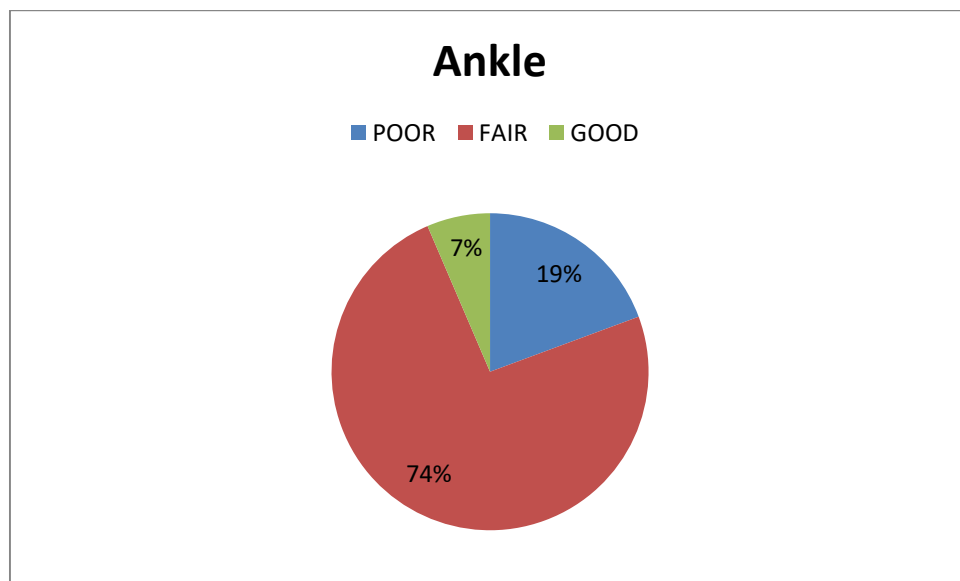
GRAPH 11

Ankle

■ POOR ■ FAIR ■ GOOD

POSTURE	POOR	FAIR	GOOD
ANKLE	19%	74%	7%

INTERPRETATION- Ankles were assessed, it revealed 20% photographers with poor (feet pointed out markedly and ankle sag in {pronated}), 76.6% with fair (feet pointed out) and 6.6% participants with good ankle posture (feet pointed straight ahead).

DISCUSSION

The study is aimed to assess the postural deviations among professional photographers, considering the prolonged hours of working with holding cameras and limited hours of rest while attending any program for shoot. In this study, a total of 30 participants were selected based on the inclusion and exclusion criteria. The procedure and purpose of the study were explained to the subjects, and informed consent was obtained from all participants before starting the assessment. Participants were asked to take off their shoes and shirts for assessing the posture.

The study observed that because of holding a particular posture for prolonged period of time, postural changes were seen. Overall the maximum postural changes were seen in shoulder and ankle. While least deviations was seen in hip posture. These postural changes may cause posture problems in present and irreversible postural deviations in future.

According to many researches postural deviations can lead to many musculoskeletal disorders. [5,8,11,14] Also the findings of this study contribute to the existing literature by shedding light on the risk factors of posture deviations among different populations . As many previous researches were done on the postural deviations among different population, the result of few studies it is reported that there is high prevalence of change in the posture because of adapting a particular posture for prolonged periods of time. [8,11] Also the

further scope of some researches showed postural deviations as a risk factor for the many musculoskeletal disorders which is affecting the overall work experience.[8,11,14]

A study suggests Studies showed that frequent computer users have decreased ability to control posture and maintain balance even if no symptoms of pain or any other musculoskeletal disorders are present [16] . This may be explained by anterior head translation position that leads to anterior displacement of center of gravity (COG) causing disturbance in both static and dynamic balance resulting in higher incidence for falling and musculoskeletal injuries. Another explanation, is FHP is associated with contraction in the cervical extensors and is transmitted through the myofascial system to the plantar flexors of the ankle that are over activated to counter anterior COG translation, to maintain balance . [24]

Body posture refers to the position of a person's body in space, the alignment of body parts in relationship to one another and to the environment at one point in time, and is influenced by each of the body's joints.[21,22] Postural control also constructs a reference frame for proprioception, i.e. the perception of joint angles and muscle tensions, of movement, balance and posture.[23]

According to this study, some parts of the body showed good posture but some areas are prone for postural deviations.

This result indicates that due to stress over the particular muscles and joints can alter the mechanism body part which leads to postural deviations. After a prolonged period of maintaining poor posture for repetitive and a longer period of time there is a reduction in the length of the muscle and its fibers and in the number of sarcomeres in series within myofibrils as the result of sarcomere absorption. This absorption occurs at a faster rate than the muscle's ability to regenerate sarcomeres in an attempt to restore itself. The decrease in the overall length of the muscle fibers and there in series sarcomeres, in turn, contributes to muscle atrophy and weakness.[16,17]

A study titled, "Rapid upper limb analysis in ergonomic risk factors among photographers" showed that there is more repeated strain over the neck and shoulder. Photographers in this study maintained awkward position and had high ergonomic risk levels when using their camera. Also type of work they observed was holding the camera, hanging the camera in the neck, carrying a bag. They concluded that Wedding photographers had high ergonomics risks but the limitations of the studies were they had done the assessment of only upper limb and Only descriptive and survey method were used and no ergonomic intervention is given.[15]

Thus the findings of this study concludes, maximum affection were seen in shoulder and ankle while the least affected area was hip posture.

V. CONCLUSION

The study concludes that the more affection was seen in shoulder (76.6%) and ankle (76.6%) and the least affection was seen in hip posture (3%).

VI. CLINICAL IMPLICATION

- Early detection and Intervention: The study helps in identifying and early detection of postural deviations among professional photographers and prevent the progression of musculoskeletal imbalances.

- The study finds deviations in normal posture. This knowledge can guide the development of preventive measures, such as ergonomic interventions, postural awareness programs, and exercises, to reduce the incidence and impact of poor posture in this population.

VII. LIMITATION OF STUDY

- Only descriptive and survey method were used for the assessment of the posture and no ergonomic intervention is given.

- The scale used in the study uses a visual method for the analysis of the posture so the chances of human error   may possible..

VIII.   RECOMMENDATION AND FUTURE SCOPE OF STUDY

- By understanding the factors affecting abnormal posture, specific ergonomic interventions, postural awareness programs and exercises can be spread among this population to reduce the chances of Poor posture and thus reduce the chances of musculoskeletal injuries and employers.

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