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## Case study on lower back pain injuries among women athletics with special reference to weightlifting

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### Abstract

Importance of this article is knowing about human back and lumbar spine. This article answer to important questions such as what is back injury. How injury is happening?

The purpose of the study is to come up with some information about human back and especially lower back injuries in weightlifters.

In this article level of participation questionnaire explored. The participants in this study were 10 middle ages women. The sample was collected through random sampling method.

**Keywords:** human back, back injury, weight lifting

### 1. Introduction

Sport today involves much more than did the original idea of sports pleasure and diversion. Participation is a prerequisite for health and productivity well in to old age sport. However, are accompanied by risks that when neglected, can lead to serious harm to the body. The increase number of adults and adolescents who regularly participate in an athletic activity has raised the collective awareness of common low-back in injuries. a smaller percentage of injuries pose legitimate threats to the continued participation of the athlete in sport.

Lower back injuries are common in everyday life for reasons much broader than traditional weightlifting. Poor posture while bending twisting while lifting and other reasons can make the lower back injured. Also practicing good form in the gym and weight room can prevent lower back injuries when performing weightlifting exercise. Low back injuries symptoms must be recorded by doctors and physical therapists worldwide.

The human back is the large posterior area of the human body, rising from the top of the buttocks to the back of the neck and the shoulders. It is the surface opposite to the chest, its height being defined by the vertebral column (commonly referred to as the *spine* or *backbone*) and its breadth being supported by the ribcage and shoulders. The spinal canal runs through the spine and provides nerves to the rest of the body. The central feature of the human back is the vertebral column, specifically the length from the top of the thoracic vertebrae to the bottom of the lumbar vertebrae, which houses the spinal cord in its spinal canal, and which generally has some curvature that gives shape to the back.

Athletes are at greater risk of sustaining a lumber (lower) spine injury due to physical activity. Whether the sport is skiing, basketball, football, gymnastics, soccer, running, golf, or tennis- the spine undergoes a lot of stress, absorption of pressure, twisting, turning, and even bodily impact. This strenuous activity puts stress on the back that can cause injury to even the finest and most fit athletes. Though the entire spine is used when playing sports, it is estimated that five to ten percent of all athletic injuries are related to the lumbar spine.

**Weightlifting:** Weightlifting, weight lifting and weightlifting all have a "generic" meaning which refers to the activity of lifting weights. To those who are well versed in the use of weights, the word weightlifting has a particular meaning.

The majority of episodes of acute lower back pain are caused by damage to the muscles and/or ligaments in the low back. While a muscle strain doesn't sound like a serious injury, the resulting lower back pain can be surprisingly severe and is the cause of many emergency room visits each year. Resulting lower back pain can be surprisingly severe and is the cause of many emergency room visits each year. Resulting lower back pain can be surprisingly severe and is

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The cause of many emergency room visits each year.

There are two common types of lower back strain:

- **A muscle strain** happens when the muscle is over-stretched or torn, resulting in damage to the muscle fibers (also called a pulled muscle).
- **A lumbar sprain** happens when ligaments are stretched too far or torn. Ligaments are very tough, fibrous connecting tissues that connect the muscles to the bones and joints.

Any weight-lifting exercise can place undue strain on the lower back if done incorrectly. Exercises that pose a risk just by the nature of the movement itself include the clean and jerk, barbell squat, snatch and dead lift. Exercises such as bent-over rows, where you are bent at the waist while holding weight, also pose greater risk to your back.

**2. Data collection**

The study has been based on a “a lower back pain injury and physical therapy treatment among 10 women weight lifters All the women are weightlifter between 18 to 30 years old.

**3. Test administration**

The purpose of study was to survey the understanding and recognize weight lifting injuries and lower back pain among women weightlifters at Hyderabad district.

One questionnaire prepared regarding to women field (weight lifting), weight lifting injuries, treatment by physical therapy, age for weight lifting, exercise of weight lifting

**4. Results**

**Table 1:** Doesn't weightlifting "stunt" your growth and terrible injuries? Does any difference between men and women?

Yes	No
1.yes	
2.yes	
3.yes	
4.	no
5.	no
6.yes	
7.yes	
8.yes	
9.	no
10.	no
60%	

The Above table indicates that the risk of weightlifting for human growth that 60% has been answered yes and also 40% has been answered no.

**Analyze:** There is no evidence that participation in the sport of weightlifting hampers an athlete's growth in any way. Scientists and medical professionals have postulated that strenuous training by young people might affect their growth adversely, but little scientific evidence of this has not been developed - certainly not in the context of rational training programs conducted under careful supervision.

**Comparative the structure of body functional and training between, women, men injuries in weightlifting sports Women and men**

**Women:**

**1. Strength in women**

- a. Absolute body strength of females is about 2/3's of males,

although this difference is not consistent for all muscle groups.

-Absolute lower body strength ranges from 60-80% of males

-Absolute upper body strength ranges from 35-79% of males

- b. Men may have advantage in neuromuscular response times that results in greater force production speed than women (PSM 99)
- c. Distribution of fiber types (fast and slow twitch) is similar in two sexes
- d. Women able to use a greater portion of stored elastic energy that men during activities in which muscle is pre-stretched, such as counter- movement prior to jumping.
- e. Based on strength to lean body mass ratio, women are about equal to men.
- f. When strength calculated per cross-sectional area of muscle, no significant difference exists.
- g. Measuring strength this way suggests that muscle at the cellular level has a force development capability independent of sex and that women benefit from strength training at least as much as men.

**2. Body size and lean body mass**

Taken into consideration, relative strength differences are appreciably less.

- Lower body- almost equal to males

- No difference in force per unit of cross sectional muscle

c. At maturity, males are 13cm taller, 14-18kg heavier, 18-22kg more lean body mass, 3-6kg less fat weight (avg. body fat of 15 compared to 23%)

**3. Body composition**

- a. RE will decry. Body fat, incr. lean weight, and either no change or slight incr. in total weight
- b. Remember gender characteristic fat stored around mammary glands and pelvic/thigh region.

**4. Hypertrophy**

- a. Muscle will hypertrophy due to RE
- b. Relative degree is equal to males but absolute is smaller
- c. Genetic predisposition to hypertrophy and/or exogenous androgen use most likely play significant roles in determining amount of hypertrophy achieved.
- d. Females have similar fiber type distribution but fibers are smaller in cross-sectional area
- e. Functional quality of muscle is the same in regard to contractile properties and the ability to develop muscle strength

**5. Androgens**

- a. Produced by adrenal glands and the ovaries- contribute about equally except at mid-cycle
- b. Females have 1/10th the testosterone- this account for some of the above differences in strength and hypertrophy. Levels do vary.
- c. No exercised induced incr. in testosterone NSCA V14No2
- d. And rosette done: absolute response to weight training is similar in males and females

**6. Menstrual cycle**

The women demonstrated greater anaerobic capacity, produced greater peak power and were less fatigued by the end of the exercise during the lateral phase than during the follicular phase.

Follicular phase: within 48 hours of the first noticeable sign of menstruation

Lateral phase: End of flow within 14-15 days.

- a. Little evidence to suggest onset affects athlete performance
- b. menstrual cycle does alter certain hormone concentrations and response to exercise-early follicular phase, higher growth hormone concentration
- c. Tremendous variation in responses to menses.

**7. Pregnancy**

- a. little data- anecdotal evidence suggests that women may safely train during pregnancy using a little common sense
- b. reduced levels of testosterone

**8. Bone structure**

- a. Narrow shoulder of women causing problems- no evidence to support this.
- b. Must pay attention to carrying angle at elbow, Q angle at knee

**9. Injuries**

- 1. Women may be more predisposed due to wider hips and smaller shoulders.
- 2. Greater Q angle at knee- more of theoretical argument
- 3. Excess joint laxity may predispose to dislocations
- 4. Smaller wrists
- 5. Back problems are common in female track and field athletes
- 6. Advantage- incr. flexibility

**Table 2:** What is the best age for beginning the weight lifting for prevention of injuries?

A.20-25	B.25-30	C.30.35 35-40
1. 20-25		
2.20-25		
3.20-25		
4.		30.35
5.25-30		
6.25-30		
7.25-30		
8.20-25		
9.20-25		
10.2025		

The Above table indicates that the Best age for weight lifting that 60% answered 20-25.

30% has been answered 25-30 and 10% also has been answered 30-35.

**Analyze:** You are never too old to begin lifting weights. In fact, the older you are, the more important it is that you do so. This is because while a young person will become stronger with age, once a person reaches the age of about 30, he or she begins to lose strength gradually, the rate of loss increasing with age (the average untrained person loses approximately 50% of his or her lifetime maximum strength by the time the age range of 75-80 has been reached). A person who continues to train may be able to reduce that strength loss by about half of what it would have otherwise been (so instead of losing 50% of ones strength by age 80, one might only lose 25%). Naturally, if that person never trained at all, he or she could actually become stronger at an advanced age than he or she was at 25. Moreover, recent research has shown that the rate of improvement made by those who begin training late in

life is about as rapid as that of youngsters - these older athletes merely begin training at a lower performance level. I have seen athletes begin competitive weightlifting in their 40's, 50's and later, and become quite successful in "Masters" (age division) competition. At the outset, the new weightlifter should be particularly aware of several limitations. First, older athletes tend to be less flexible than younger ones in older athletes become injured more easily and recover from injury more slowly than younger ones. Consequently, the older athlete must begin very conservatively by using weights that are relatively light, performing only one set per new exercise for the first couple of weeks and limiting the number of exercises to a few each workout. There is "Masters" competition. This is age grouped competition for athletes age 35 and older. Masters competitions have 5 year age brackets (e.g., 35-39, 40-44) as well as weight classes. Therefore, you are always competing against athletes your own size, age and gender.

**Table 3:** What is the best advice for prevention of back injury in weightlifters?

A. good posture	B. Flexi ability	C. Strength	D. proper technique
1.			proper technique
2.			proper technique
3.			proper technique
4.			strength
5.good posture			
6.			proper technique
7.			proper technique
8. flexi ability			
9.			good posture
10.			proper technique

The Above table indicates that about best advice for prevention back injuries among women weightlifters. That 70% has been proper technique and 10% has been answered strength and also 20% has been answered good posture

**Analyze:** Here are some helpful pointers which can help to prevent back ache caused by weight training: Make sure to always use good posture and form when lifting. Do not rush through a set or an individual repetition. Do not attempt more than you are capable of lifting. Do not work out alone, especially with free weights. Always have a spotter and make sure that your spotter can actually hold the weight you are lifting if need be. Do not twist your waist when lifting or putting down weights. Use your legs to lift heavy weights and do not lift with a bent back. Wear gloves to increase the friction of your grip and to prevent weights from slipping or falling. Make sure to wear comfortable shoes that will give you adequate traction. Always stay hydrated and never overdo it.

- 1. Proper preparation: One or more warm-up sets
- 2. Examination of athlete
- 3. Strength balance
- 4. Flexi ability
- 5. Proper technique- avoids Valhalla
- 6. Basic exercises should be performed through a full range of motion.
- 7. Proper manipulation of training variables
- 8. Proper equipment maintenance Parts lubricated, floors cleaned and disinfected, plates put away

**5. Conclusion**

Weight lifting back pain is a common side effect of resistance

based exercise. Weight training can be defined as using free weights, universal machines or Bowflex/Soloflex machines. Free weights are statistically the most dangerous of all types of resistance training.

Improper lifting technique, lifting when you are too tired or lifting more than you are capable of doing are the three usual reasons for injury or pain to occur. Damage may occur to the spine itself, to the back muscles, to the connective tissues or to other structures in the body, such as the internal organs. In some cases, significant trauma, like hernias or intervertebral disc damage, may occur.

### **Prevention of weight lifting back pain**

Here are some helpful pointers which can help to prevent back ache caused by weight training:

Make sure to always use good posture and form when lifting.

Do not rush through a set or an individual repetition.

Do not attempt more than you are capable of lifting.

Do not work out alone, especially with free weights. Always have a spotter and make sure that your spotter can actually hold the weight you are lifting if need be.

Do not twist your waist when lifting or putting down weights.

Use your legs to lift heavy weights and do not lift with a bent back.

Wear gloves to increase the friction of your grip and to prevent weights from slipping or falling.

Make sure to wear comfortable shoes that will give you adequate traction.

Always stay hydrated and never overdo it.

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