# POWER CLEAN RESEARCH?

**Fraudulent**

**Overzealous**

**Sham**

**Irresponsible**

**Disgraceful**


**Ken Mannie, Michigan State Strength Coach, claims Power Cleans, Snatches, Push Jerks and Olympic Lift Movements are dangerous and unnecessary.**

**BY DR. GREG SHEPARD**

There were a number of strength coaches who were outraged at Ken Mannie's published article in the April issue of Scholastic Coach entitled "Ballistic Weight Training: Dangerous and Unnecessary." Ken Mannie is the strength and conditioning coach at Michigan State University and an advocate of High Intensity Training methods. The negative adjectives listed above were used to describe attitudes by some towards this article.

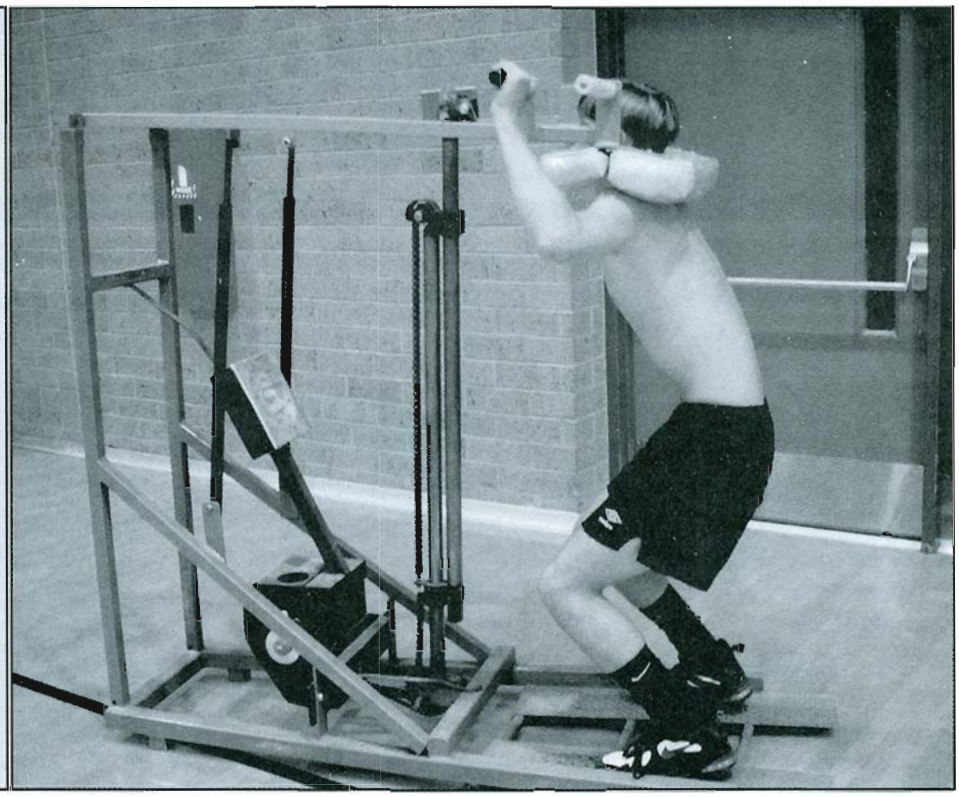
I am not going to get involved in name calling. I will attempt to accurately present Coach Mannie's side of the article and then make a few comments. I will also discuss each "research study" and finally, present an astonishing injury-free-record by our BFS Clinic Coaches.

Mannie defines ballistic lifts as the Power Clean, Snatch, Clean and Jerk, Push Jerks and Speed Squats. Mainstream strength coaches don't use the term ballistic and since the most popular of the above lifts is the Power Clean, I will usually use the term Power Clean for ballistic in this article.

Mannie states, "The (Power Clean) is not essential in speed and/or power development, performance enhancement or skill acquisition. One of the most controversial issues of the day concerns the value of doing (Power Cleans).

"(Power Clean) proponents contend that such training 'simulates' the movement, velocity and accelerating pattern in many sports. These claims are not supported by the research. At best, the conflicting

**Coach Mannie claims that because high school kids, according to a 1979 "scientific article", hurt their lower backs on the now defunct Leaper Machine, that Power Cleans, Snatches, and Olympic Lifts are dangerous and carry a high risk of injury.**



data and/or lack of irrefutable findings render the entire controversy inconclusive.

"High force/low velocity movements (slow to intermediate speeds) place heavier demands on the target muscles. Low force/high velocity movements (light weights and 'fast' speed) are less productive with respect to maximum force production and accompanying strength development." (Shepard poses the question: Is doing a 300 pound Power Clean considered a light weight done with fast speed?)

Mannie further states, "Speed and 'explosive' type training should be worked on in the proper setting - through drills and running programs performed at the appropriate task-specific speed with the proper form." (It is Shepard's understanding that Mannie means if you want to jump higher and more explosively, you should practice jumping not do Power Cleans.)

Mannie believes, "That even with the proper supervision and proper technique, Power Cleans and other Olympic Type Movement lifts carry the highest risk of injury in the weight room.

"A large body of evidence (see references 1-8, 11-13, 18-20) supports my claim. These scientific articles indicate that the so-called 'explosive lifts' (Power Clean and Olympic Type Movements) carry a high risk of injury to muscle tissue, fascia, connective tissue and bone structure."

That concludes Mannie's position. Now, let us examine this "large body of evidence" and you, the reader, can draw your own conclusions:

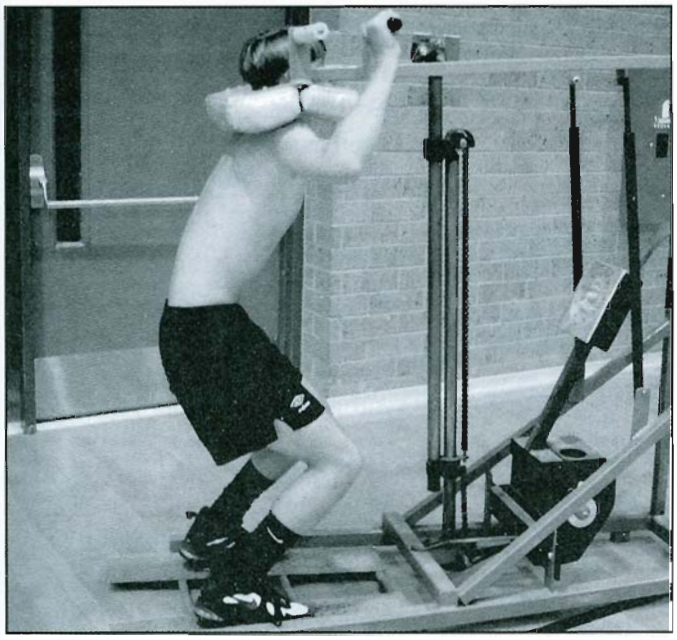
## REFERENCE #1

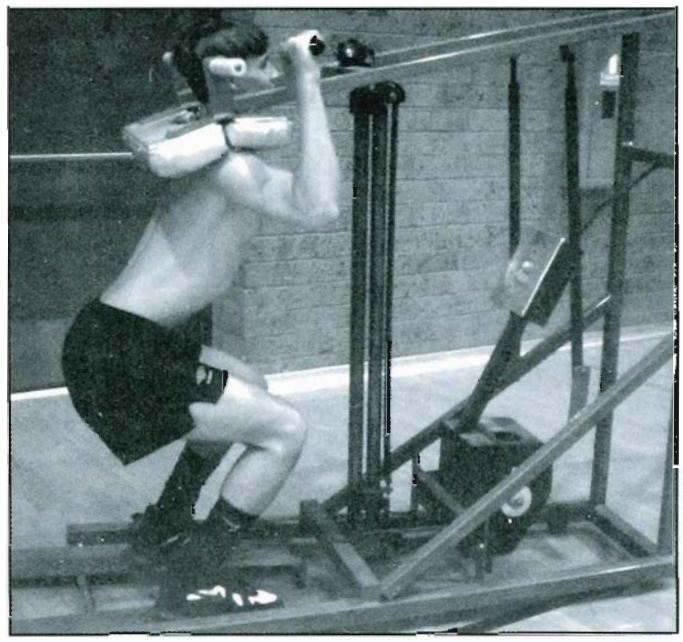
Two M.D.'s from India and one M.D. from Nigeria conducted this 1979 study in Patiala, India. Their subjects were 25 "weight lifters" and 25 track athletes from Patiala, India. The average age of the subjects was 31.5 for the "weight lifters" and 27 for the track. The M.D.'s examined each subject and found 10-12 guys complained of low back pain and one of these guys from India had lumbar lordosis.

**MY COMMENTS:** The term weight lifters was never defined. Most likely they were not Olympic lifters but just guys who lifted weights. We have no clue on how technique was ever performed on anything. The terms ballistic, Olympic Lifts, Power Cleans, Snatches or anything remotely related were never mentioned. Basically what you have is 10-12 out of 50 older guys from India complaining of low back pain. You, the reader, must decide if this "scientific article" proves that if you do Power Cleans correctly that this carries a high risk of danger.

## REFERENCE #2

M.J.L. Alexander from the University of Manitoba studied the Biomechanical Aspects of Lumbar Spine Injuries in Athletes. Much of this lengthy study reviews past





**The high school athlete on the right has his back in good position and won't get hurt, but if he does it with a bad position (shown on left) he probably will get hurt on the Leaper. ANY EXERCISE DONE WRONG IS RISKY!**

research, about 2 pages out of 18 were related to weight training. The bulk of the 18 pages described Lumbar Spine Injuries and the problems with these injuries in a wide spectrum of activities. Enoka (1979) found the double knee bend technique in the Clean was more efficient and the force less. Farafan (1978) concluded that humans have an overall mechanical advantage over **primates** in lifting weights. Hoshina (1980) found high school and college athletes in Japan had more lower back pain if they were heavier and more muscular. Weight-loading sports, which tend to compress the spine include weightlifting, bowling, horseback riding, motor biking and jogging on a hard surface. Rotation activities which twist the spine are squash, tennis, baseball and golf. Back arching causes problems with sports like skiing, volleyball, badminton, rowing, archery and tennis. Fair (1979) says female athletes have more lower back problems than men. Kotani (1971) reported 8 out of 26 weight lifters had spondylolysis but then Kulund (1978) reported a low incidence of back injuries to 80 olympic lifters. Kulund suggested the muscles developed through their lifting afforded protection. Alexander, the author of this review, concluded that weightlifting and football should be avoided by prepubertal athletes.

**MY COMMENTS:** You decide if these reviews prove the Power Clean is dangerous when done correctly but I, for one, take great comfort now that I know I'm better at lifting than an ape.

## REFERENCE #3

This "scientific article" consists of comments by a panel of nine M.D.'s . They state, "Weight training is helpful to athletes in virtually all sports. Weight training, because of the benefits and lower potential for injury, is a reasonably safe technique that, when supervised, can be endorsed for youth. Weightlifting (meaning Power and Olympic Lifting) has a high potential for injury if not practiced correctly and safely. The majority of weight training-lifting injuries among 10-19 year-olds occurred in the home." They conclude, "Maximal benefits are obtained from appropriate weight training in the postpubertal athlete. Teenagers who wish to participate should take proper safety precautions and have capable supervision.

**MY COMMENTS:** I couldn't agree more.

## REFERENCE #4

Twenty-nine high school athletes in the late 1970's developed lumbosacral pain as a direct result of weight training. Seventeen of the 29 gave a history of using the Leaper, 6 used the Leaper and a Universal Gym, 4 did Dead Lifts and the remaining two worked out exclusively on a Universal Gym. Seven of the kids were hospitalized.

**MY COMMENTS:** You, the reader, must decide if the injuries incurred while working out on the Leaper machine, Universal Gym and Dead Lifting have a meaningful and direct correlation in making a claim that Power Cleans are dangerous.

## REFERENCE #5

This is a case report of one 16-year-old male with an "insidious onset of low back pain and pain extending down the left leg." The previous day this boy did a Bench Press with 160 pounds, a Dead Lift with 225 pounds and a Power Cling (sic) with 160 pounds. He had some mild back pain immediately after doing a set of Power Clings (sic). It was reported that the boy's coach emphasized that when one tires then it is time to maximize the effort. The boy underwent a decompressive laminectomy.

**MY COMMENTS:** I'll let it pass that the M.D.'s can't spell Power Clean but the salient point here is the coach. You don't do Power Cleans tired, let alone go for a maximum effort tired. I would suspect from his statement that the boy's quite modest 160 pound Power Clean was done with technique problems. Was the Power Clean the problem or was it the coach?

## REFERENCE #6

Couldn't find.

## REFERENCE #7

Ten subjects from Oregon State University were selected to study the Clean and Jerk. All had previous experience with this lift and none had a medical history of low back pain. The average age was 24. It was found that stress was highest at the earliest part of the lift. The author, Susan Hall, admits that interpretation was complicated.

**MY COMMENTS:** Is this kind of like an oxymoron? If the Clean is so dangerous, how could you find ten 24-year olds with Clean and Jerk experience with no back problems in a small place like Corvallis, Oregon? The study? Nothing new. Most coaches should know the stress on

In the April 1995 issue of Scholastic Coach, an article was written by Ken Mannie entitled "Ballistic Weight Training Dangerous and Unnecessary". I was asked by Coach Kreis to look into Mr. Mannie's story and his references to check on the validity of his statements. The first thing I noticed was that Mr. Mannie only listed the year of publication for his sources even though they are issued monthly. Therefore, I could not go directly to the sources. Using a database to look up his references, I found that Mr. Mannie listed the wrong year for one of his sources (#8 Hoshina), he misspelled the last name of one of the authors (#5 Browne, T.D.), and he used the wrong initial for another author (#13 Kulund, D.N.). One article did not show up at all on the database (#6 Duda, M.), so I went through all the issues for that journal (Phys. & Sp. Med.) for the entire year. I never found the article. Also, in his article Mr. Mannie cites work done by Dr. Kevin Speer from the Duke Medical Center but never references any work done by Dr. Speer.

In his article Mr. Mannie states "I believe that even with the proper supervision and proper technique, ballistic training carries the highest risk of injury in the weight room. A large body of evidence supports my claim". He then cites 14 of his 21 sources. Of these 14 sources several of them talk about injuries from weightlifting but never distinguish olympic weightlifting (Aggrawal, Risser, Risser, Watkins), and one does not even talk about weightlifting (Hoshina). Those articles that do talk about olympic weightlifting, as well as those that do not make a separation, conclude in contradiction to Mr. Mannie's statement that most weightlifting injuries are prevented by following safe procedures.

One study in particular referenced by Mr. Mannie (#4 Brady, T.), compared various forms of lifting and found many back injuries associated with the leaper machine from Strength/Fitness Systems. At the end of this article, Fred L. Allman Jr., MD., who was not involved in the study, wrote a commentary equating the leaper to olympic lifting. This particular study had nothing to do with olympic lifting and Dr. Allman should know that findings from a research project can not be generalized in this manner. The American Journal of Sports Medicine should also know generalizations like this can not be made from the results found in the study and should not have permitted the commentary to be printed on the end of that article.

Coaches reading Ken Mannie's article may think it has to be valid and accurate with all those references backing it up. However, I found Mr. Mannie to be careless and sloppy in his referencing as well as inaccurate in his claims.

**Dwight Robinson, SSC University of Colorado**
**overseen by D.J. "Doc" Kreis: Head Strength Coach-University of Colorado**

the lower back is greater at the beginning of the lift than at the end. So what?

## REFERENCE #8

The Hoshina study in Japan again. He x-rayed the spines of 677 male high school and college athletes. He found that Rifle Shooting athletes had a lot more back problems than football or track athletes.

**MY COMMENTS:** Ballistic exercises, Power Cleans, Olympic Lifting, Push Jerks or anything of the kind were never mentioned. Somehow, you must figure out how Hoshina's study relates to Power Cleans being dangerous.

## REFERENCE #11

John P. Jesse, an RPT, basically gives his opinions similar to Ken Mannie's article. There is no original scientific study material only bits and pieces from previous studies. Jesse states, "I have campaigned for 25 years against the use of Olympic lifting movements in weight training programs for athletes."

**MY COMMENTS:** Seven drawings were presented to illustrate Olympic Style Lifting. The technique shown was frightful. Two possibilities exist: 1) Jesse just doesn't know anything about these lifts or 2) they were purposefully drawn incorrectly to emphasize his opinion against these lifts (See accompanying illustration of one of the seven drawings shown top right).

## REFERENCE #12

Not found

## REFERENCE #13

This is the Kulund study which

Shown just above is the proper technique. Notice the flat feet, back locked-in, chest spread and more.

## WEIGHTS & INJURIES

The worst injury of the year in the weight room this year, in my opinion, happened on a Bench Press Machine. A male was found dead with the bar across his throat after Bench Pressing on his machine.

From my perspective, the Bench Press is by far the most dangerous of all the lifts. I know of 8 other people who have died doing them. There have been crushed throats, torn lips, loss of all teeth, broken and crushed noses, permanently damaged eyes, crushed foreheads, and even ripped scalps.

If someone wants to start a crusade for safety in the weightroom, let's start with Bench Press safety and technique procedures. Lifts by themselves don't cause injuries. Incorrect technique and procedures are the cause of injuries. There are no dangerous lifts: only dangerous coaches. I would encourage any coach involved in weight training to get our safety poster and video. You can learn the technique of the Power Clean and their variations in great detail through our BFS Total Program Book and video or better yet have a BFS clinic.

we've talked about previously in REFERENCE #2 which indicated surprisingly low incidence of lower back problems to Olympic Lifts. In addition, Kulund also found knee injuries were not a problem with Olympic Lifters. He stressed that good coaching is needed to prevent weight lifting injuries. You must follow safe procedures.

**MY COMMENTS:** This study seems to support mainstream training philosophies rather than to support Mannie's side.

## REFERENCE #18

This interesting study included 354 junior and senior high school students who were weight training for football. Twenty-five were injured. Injuries were counted if they resulted in at least 8 days of missed participation. Another study involved 71 experienced high school power lifters. Twenty-eight athletes were injured. That is a staggering 39.4 percent. The injured athletes lost an average of 11.5 days per

*-continued on page 49-*

## Coach Mannie's References

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## INFO ON GAINING KNOWLEDGE & CERTIFICATION

A Coach can get considerable help with knowledge from three main sources and meaningful certification from two of these sources;

1. BFS: This journal provides a wide variety of help through books, videos and clinics.

2. The National Strength Coaches Association (NSCA) has much information and provides a written multiple choice test for certification:

NSCA
530 Communication Circle
Suite 204
Colorado Springs, CO 80905
1-719-632-NSCA

3. International Sports Sciences Association (ISSA) has a wealth of great information. Their certification is based on practical application tests. Dr. Shepard highly recommends their approach. Write:

ISSA
2910-B State Street
Santa Barbara, CA 93105
1-800-892-ISSA

*-continued from page 48-*

injury. William Risser, the author, states, "Athletes who lift weights need qualified coaches."

**MY COMMENTS:** Unfortunately, the kind of weight training program used by the 354 football players was never discussed. We don't know if they did Power Cleans, worked on machines or did the HIT program. We don't know the qualifications of the coach/teacher. All we know is that 25 players got hurt using some kind of weight program. It would be pure conjecture from this study to claim Power Cleans are dangerous even when done correctly. Please refer to the graph outlining the record of our BFS coaches. This counters the above study in dramatic fashion.

## REFERENCE #19

Not found.

## REFERENCE #20

Watkins and Dillen discuss Olympic weight lifting and football weight training. They feel Olympic weight lifters are at the greatest risk when the weight is overhead. One study cited estimated that more injuries may actually occur in training than in competition. They emphasize that safety in the weight room is important and that strength coaches should prepare the lumbar spine for football and weight lifting.

**MY COMMENTS:** I agree completely that a strength coach must know HOW to teach and lift on any system. Correct technique is important. As far as preparing the Lumbar Spine, our method of doing Straight Leg Dead Lifts with light weight in a slow, controlled manner is a wonderful way to accomplish this preparation. Power Cleans, Ballistic Lifting, Snatches or Olympic lifting type movements were NOT mentioned in the football section of their discussion.

This concludes my survey of the references given in Mannie's article. You should now have enough information to draw your own conclusions. I would invite anyone to look up and peruse each entire study at your own leisure.....❑

# BFS INJURY STUDY

*-chart is on the following page-*

Each one of our BFS clinic coaches in our study train athletes and non-athletes on the BFS program. Doug Ekmark, Jeff Scurran and Bob Doyle are all outstanding head football coaches at their respective high schools. Jim Brown is Poplar Bluff's defensive coordinator, while Len Walencikowski is now concentrating on being the strength coach for all sports at Miami Southridge High School. All have had at least two BFS Clinics at their high school. I can testify that each of these coaches is a master teacher and an expert in teaching and coaching the Power Clean and all variations associated with this lift.

The football injury portion of this study indicates the number of season ending knee and shoulder injuries during the football season for the last 5-1/2 years (1990-1995). This also includes the number of surgeries required as a result of injuries incurred in playoff games.

Coach Doyle stated, "We averaged one student a year for the last twelve years that would go to a doctor about a soreness incurred from weight training. The doctor had them take a week or two off just to be safe but none of these twelve required more than that."

I submit that our BFS study is more valid than any of the "scientific articles" referenced by Mannie from three standpoints.

**Number of Subjects:** 10,200 high school students which were both athletes and non-athletes.

**Longevity:** Least amount of years our BFS Coaches have been at their school is 6 years.

**Only Study:** That claims to have proper supervision and utilize proper technique while doing Power Cleans and their variations.

Our BFS study indicates there is no danger in doing Power Cleans or ballistic-type movements and furthermore, our study indicates an incredible injury-free rate to shoulders and knees during the football season. In fact, it appears that weight training done under the above parameters is the safest activity in the high school curriculum. There are more injuries in football, basketball, volleyball, softball, tennis or golf physical education classes. A mainstream type program, when done correctly, does not cause injuries but rather prevents them.