



PRINCIPLES FOR TEACHING PLYOMETRIC EXERCISES TO BEGINNERS



By Tom Cross
1994 NSCA
College Coach of the Year

While “plyometric exercise” is as old as man, it is a relatively new term applied to “jump training” developed by Russian coaches during the early 1970’s. As a college strength coach, I received more questions from high school coaches concerning plyometrics than any other subject. Perhaps a definition would be a good starting place.

Plyometrics are forms of jump training involving the “stretch reflex.” This means that prior to the concentric contraction (shortening phase), there is an eccentric contraction (lengthening phase). This is an automatic reflex response that does not

require a message from the brain. It is the quickest and strongest of muscle contractions. The purpose of plyometric exercise is to increase power.

Fundamental Principles Which Govern Plyometric Movements

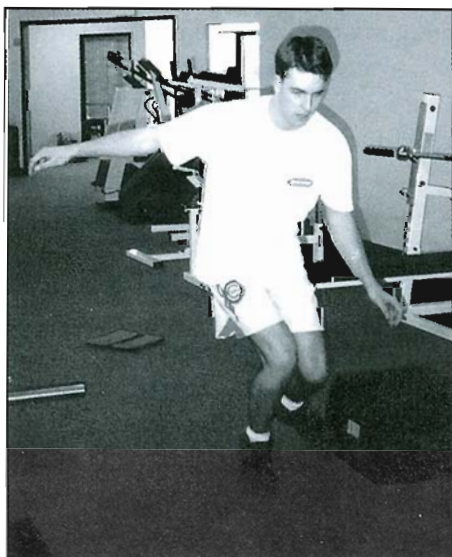
1. The faster the stretch, the faster the response.
2. The stretch (amortization) phase must be quick for the concentric phase to be powerful.
3. The neuro-muscular system is activated in striving for quick reactions.
4. Training changes the strength of the response far more than the time of the response.
5. Efforts should always be maximal — therefore, complete recovery between exercise repetitions is essential.

6. For an exercise to be plyometric, it must be preceded by an eccentric contraction. Example: a basketball rebound movement is plyometric, a sprinter’s start is not.

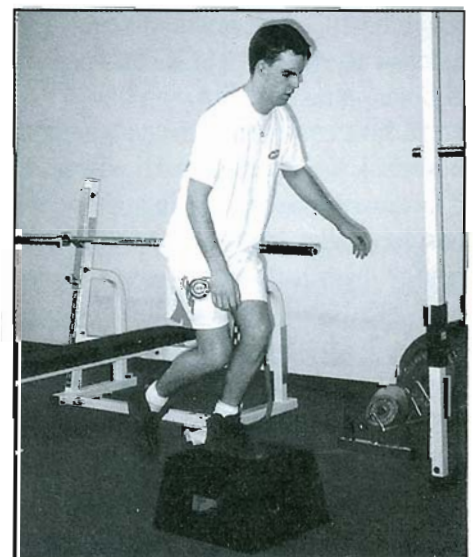
7. Because of the intensity of the neuro-muscular activity, plyometric training frequently has led to injury for the inexperienced coach.

With this background information, it becomes apparent that as with many training activities, those which have the greatest potential to bring improvement also have a similar potential for injury. Safety is likely the overriding concept in plyometric training. Basic guidelines include:

1. Train on a resilient surface: grass or matt: stay off concrete floors.
2. Add the training after two or three weeks of preparation.



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3. Less, not more, often produces the best results.
4. Move from low intensity to higher intensity as skills are mastered and not before.
5. Train for power (strength and speed) not aerobic conditioning.

Any movement that involves the stretch reflex may be classified as plyometric exercise. This includes a wide range of exercise with a huge variation in intensity. It is vital to start with activities the athlete can handle well. There are many ideas on readiness tests often using the back squat as a measurement. I have

found a series of stabilization jumps to be a much more reliable guide. They also develop balance, ankle strength, and a kinesthetic sense of awareness. We expect the athlete to hold (Stick) each landing 3 seconds.

Activities progress from low to higher intensity:

1. Single leg horizontal hop (Stick)
 - a. compare right and left leg
 - b. check and adjust posture
 - c. heel down, total foot placement
2. Single leg vertical hop (Stick)
3. Hop onto a 12-16 inch box (Stick)
4. Step down from a 12-16 inch box (Stick)

5. Multiple jumps
 - a. 10-15 seconds, line jumps, both lateral and forward to back
 - b. skips and bounds, check foot strike, arm action, posture

The Box Below lesson plan should help provide the coach and athlete a plan for progression that will develop good technique, prevent injury, and produce measurable increases in power.....□

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LESSON I BEGINNING EXERCISES AND FUNDAMENTAL COACHING POINTS

1. Landing Exercises — foot strike; ankle, knee, hip flexion; posture that will enable the athlete to move into the next jump in control.
2. Stabilization Jumps — Stick each landing: horizontal training
3. Vertical Jumps — use of arms (Stick) posture: balance

— when these moves are done with control —

LESSON II

1. In Place Bouncing — move the COG (ankle bounce; tuck jumps)
2. Short, Quick Repetitive Horizontal Jumps — (double leg; single leg; line jumps)
3. Long Jumps — same as #2 but emphasize distance with quickness (Bounding; 5 hops; Triple Jump; Quick Jumps over small barrier)

— when these moves are done with control —

LESSON III (FOR QUALIFIED ATHLETES)

1. Repetition Box Jumps
2. Same as #1 with changes in intensity and direction
3. Shock Jump - for highly skilled and finely trained only!

Plyometrics are a part of the total training package and can be most effective in bridging the gap between strength and speed. Remember, the purpose is to increase power which requires skilled and intelligent coaching. The athlete must be ready mentally as well as physically to focus on the task with maximum intensity. In designing and implementing a plyometric program, the most important consideration is the athlete. Age, training age, experience, maturity, and body type are criteria that will modify the training to the specific needs of the individual. Also, the coach must recognize plyometric training is just one piece of the entire training routine and apply the specific principles in an artistic manner to realize maximum benefit for each athlete.



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BENCH RECORD CHART

NAME: _____ POUNDAGE

SCHOOL: _____ YEAR: _____

YEARLY RECORD

NAME	WEIGHT	PERCENT
	115	
	125	
	135	
	145	
	155	
	165	
	175	
	185	
	195	
	200	
	RWT.	

SCHOOL RECORDS

NAME	WEIGHT	PERCENT
	115	
	125	
	135	
	145	
	155	
	165	
	175	
	185	
	195	
	200	
	RWT.	

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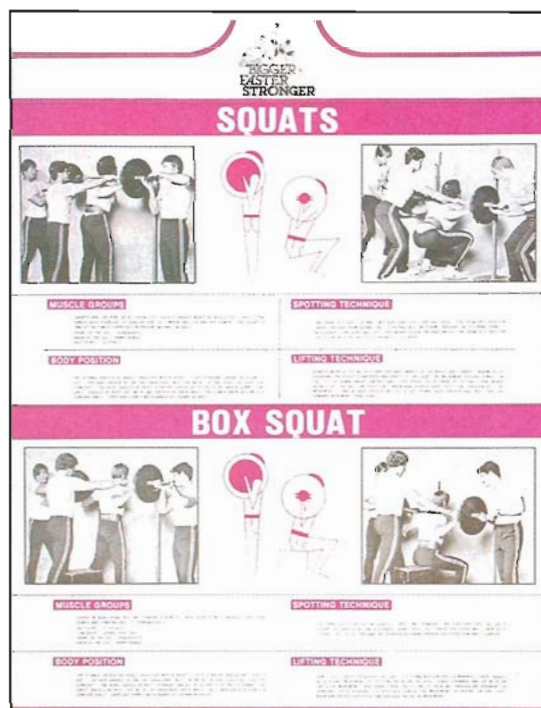
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20 YARD SPEED

NAME		TIME																			
		4.0	3.8	3.6	3.5	3.4	3.3	3.2	3.1	3.0	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.1	2.0	1.9	1.8
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		

BIGGER
FASTER
STRONGER

SCHOOL _____
YEAR _____

YEARLY RECORD*

NAME	YR	TIME

*Top Three In Each Class

SCHOOL RECORD*

NAME	YR	TIME

*Top Ten In School History

BIGGER
FASTER
STRONGER

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WEIGHT ROOM SAFETY

1. ABSOLUTELY NO HORSEPLAY!
2. NEVER INTERFERE WITH A PERSON WHO IS LIFTING
3. MAKE SURE YOUR AREA IS CLEAR OF EQUIPMENT BEFORE LIFTING.
4. MAKE EYE CONTACT WITH THOSE NEAR YOU BEFORE LIFTING.
5. MAKE SURE YOUR COLLARS ARE SNUG.
6. PICK UP AFTER YOURSELF, RETURN WEIGHTS TO RACKS.
7. SPOT CAREFULLY! CONCENTRATE ON THE LIFTER.
8. KEEP IT CLEAN, NO FOOD, GLASS BOTTLES ETC.
9. PROTECT YOUR LOWER BACK: HEAD UP, BUTTOCKS DOWN WHEN LIFTING, SPREAD THE CHEST, LOCK IN LOWER BACK, USE A BELT.
10. HELP AND ENCOURAGE EACH OTHER. MAKE YOUR FRIEND GREAT.



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