

Technique Problem Solving for the Throwing Event Athlete



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Acknowledgement



- The following discussion is an expansion and elaboration of viewpoints expressed by Frank Dick.
- Mr. Dick served as the national chairman of the British Association of National Coaches in the UK. He is a world renown coach, educator and spokesman for our sport of track and field.

Overview on Technique



- A flaw in the athlete's technical approach to their event can not be considered to be corrected until the athlete can clearly tell the difference between correct and faulty execution. This entails kinesthetic awareness in addition to kinetics and kinematics.
- The technical model must be sound and appropriate for the training stage of the athlete.
- Correction is further enhanced by the stabilization and actualization of the new form.

Developing a Technical Model



- The source of dysfunctional movement often lies in the faulty establishment of criteria for reference or more simply, “determining what is good technique” along with utilization of poor motor learning concepts.
- It is not wise to copy an elite athlete in all aspects. Look for common denominators in a survey of many leading athletes.
- Sound technique is a form of movement which essentially does not violate biological and mechanical laws of nature.
- Efficient movement lessens injury risks and promotes athletic wellness.
- The actions performed must be appropriate and effective relative to the athlete’s resources.
- Above all, it must conform to the rules of the competition.

Primer



- The Big 3: ht. of release; speed of release; angle of release....
- Slow to fast, $f=ma$
- Big levers and small levers....angular momentum factors...
- Joint order, force is created from the C of M and works outwardly....
- Congruent angles for balance and posture...

Possible Causes of Faulty Movements



- Many technical flaws occur during the acquisition stage of the learning process.
- A large number of technical flaws can occur in established technique that does not evolve with the athlete as they grow in the sport.
- There can be negative transfer of skills learnt in other activities.

Causes During the Learning Process



- Misinterpretation of kinesthetic feedback
 - Speed in the back of the ring may lead an athlete to think the total effort is faster when in effect the rapid deceleration seen in the power position causes a net loss of velocity, momentum and timing.
 - A fast start at the beginning of the throw may be a false read of overall acceleration features at release.

LP-2



- **Poor motor mobility**

- Poor core strength and torso flexibility may inhibit the athlete from obtaining the proper power position in the throwing events.
- Poor ankle flexibility may inhibit dorsi-flexion of the ankle joint area which in turn reduces balance and joint utilization.

LP-3



- Misunderstanding of movement concepts
 - Short lever systems in the back of the ring may result in fast turns but reduce balance, acceleration and momentum upon delivery of the implement.
 - Over lowering of the center of mass in the power position may feel more powerful but in fact reduces critical horizontal velocity, interferes with rotational forces and delivery postures.

LP-4



- Negative interference from another technique
 - A cricket bowling mentality for shot putting is dangerous and inefficient.
 - Plantar flexed foot positions used by gymnasts does not result in proper ankle kinetics.

LP-5



- Insufficient background of fundamentals
 - A discus thrower who can not do 180° and 360° turns in a jump turn method will find the rotational demands of the full throw to be overwhelming.
 - A lack of understanding of acceleration mechanics dooms the thrower from the instant of first movement inside the circle.

LP-6



- Interference of a poor learning environment
 - A poorly maintained landing area can lead to injuries of the foot, ankle and knee upon implement retrieval.
 - A water filled ring or poorly mopped ring will affect balance and timing. While necessary in advanced training, this factor can limit skill acquisition in the learning process.

LP-7



- Premature introduction of strength or speed into the newly learned movement sequence
 - Increasing a thrower's windup speeds will usually result in greater speeds in the back of the circle but better results occur only if the athlete can hold form throughout the entire process during this new rate of force development.
 - Rapid increases in upper body strength while lower body strength remains the same will promote greater use of the upper body in throwers and reduce the contribution of the lower body.

LP-8



- Lack of physical abilities required by the skill set being taught
 - The positions demanded and distance covered in utilizing the ring may exceed the athlete's strength, speed and timing subsets.
 - Insufficient postures, foot placements and force production abilities may inhibit proper landing techniques during each phase of the throw.

LP-9



- Fear of injury

- An athlete with tight hip and groin muscles may balk at using the free leg during the sweep phase of the rotary throw technique.
- An athlete with a history back stiffness or pain may not be able to land in certain positions or produce desired speeds and sequences.

LP-10



- Poor demonstration, understanding or explanation of the skill set
 - Poorly researched models of the activity can frustrate gifted athletes and may result in injury or discouragement in any level of athlete.
 - Inappropriate learning style utilization can lessen greatness and efficiency.

LP-11



- Over-training of technical concepts
 - The “one more” has crushed many dreams
 - Analysis can cause paralysis

Causes of Error in Established Techniques Already Mastered



- Rational technique has not been explained
 - Excessive upper body lean in the direction of the throw created by excessive leg drive while leaving the back of the circle in rotational throwing may result in poor delivery phase mechanics.
 - A lack of correct posture at the moment of touchdown in the power position or double support phase will either result rapid deceleration or poor delivery dynamics.

ET-2



- Technique was not stabilized before competitive stress was introduced
 - An athlete who looked solid in form during practice and during the meet warm-up but reverted badly to old, faulty movement patterns exhibits low stability of form indices.
 - A thrower executing proper mechanics throughout the throw up until delivery moment and then losing balance or missing the Big 3 factors.

ET-3



- Injury has caused compensatory movements
 - A shot putter with hand or wrist pain may alter the striking position of the body and or extremities.
 - A thrower with a locked SI joint will exhibit bilateral leg differences and this can disrupt balance or postures.

ET-4



- A poorly designed training program can destroy technical mastery
 - An over emphasis on absolute strength gains can severely affect a thrower's proprioceptive awareness through the ring
 - A daily plan that has an athlete working on throwing technique after a draining running workout is a recipe for injury or a lack of coordination during the throws session.

ET-5



- Poor training conditions will limit technical growth
 - Technical sessions without coaching feedback or video review will do little to evolve the thrower’s understanding of “needs to work on” and mastery of task.
 - A lack of squad dynamics will limit the consistency and quality of effort in the evolving athlete.

ET-6



- Techniques that are incompatible with the lever system utilized by the athlete can result in huge breaks in form
 - A thrower may do very well with lighter implements but struggle with competition or heavier than normal weighted implements.
 - The use of the extremities to control rotational dynamics must evolve as speed and forces increase.

ET-7



- Coach may lack knowledge as the athlete progresses in skill
 - A coach may be very proficient in teaching skill sets that work at the club level of competition but fails to produce results at the district, state or national level.
 - The “how I did it when I was an athlete” may work for athletes that evolve to the level of performance that the coach achieved but then is stymied at the next demand of increase.
 - The “last great one I had did it this way” methods may have worked wonders for an athlete with that skill set but fail totally with one that has different attributes.

ET-8



- Poor or imbalanced physical development may result in compensatory movement schemes
 - Insufficient leg strength will compromise power position mechanics in throwers.
 - An overemphasis on speed development without a commensurate emphasis on power development can compromise delivery mechanics.

VIDEO CLIP 1



- Yuriy Sedykh: 1984
- 86.34m: Cork, Ireland
- <http://www.youtube.com/watch?v=vm4qRkNinJI>

VIDEO CLIP 2



- Christian Cantwell: 2009
- 22.03m: Berlin World Championships
- <http://www.youtube.com/watch?v=fSA-eTz3GkU>

VIDEO CLIP 3



- Andrei Mikhnevich: 2008
- 21.99m (22.00m?)
- <http://www.youtube.com/watch?v=dGqRytTK-pg>
- www.mikhnevich.info

VIDEO CLIP 4



- Gerd Kanter: 2008
- 68.82m: Beijing Olympics
- <http://www.youtube.com/watch?v=Dm4DF31Dy4Q>

VIDEO CLIP 5



- Stephanie Brown Trafton: 2008
- 64.74m: Beijing Olympics
- http://www.youtube.com/watch?v=BERvPz1e_AU