

The M&M Approach: Using Mental and Mechanical Strategies in Teaching and Coaching

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Abstract:

Mental and mechanical (M&M) techniques are very useful in teaching and coaching. Mental techniques are strategies that enhance movement through psychological preparation, such as using imagery to practice a skill. Mechanical techniques are strategies that enhance the physical side of the movement, such as correcting the biomechanics of a golf swing to increase the distance on a drive. Unfortunately, apprehension from not knowing how to effectively employ these strategies deters many teachers and coaches from incorporating mental and mechanical techniques into their curricula and practices. The M&M approach proposes a holistic incorporation of these strategies into everyday teaching and coaching, including four simple examples of mental skills and suggestions for using a qualitative analysis to improve students' and athletes' mechanics.

Keywords: mental technique | mechanical technique | training programs | coaching strategy | teaching strategy

Article:

Mental and mechanical (M&M) techniques are very useful in teaching and coaching. Mental techniques are strategies that enhance movement through psychological preparation, such as using imagery to practice a skill. Mechanical techniques are strategies that enhance the physical side of the movement, such as correcting the biomechanics of a golf swing to increase the distance on a drive. Unfortunately, apprehension from not knowing how to effectively employ these strategies deters many teachers and coaches from incorporating mental and mechanical techniques into their curricula and practices. The M&M approach proposes a holistic incorporation of these strategies into everyday teaching and coaching, including four simple examples of mental skills and suggestions for using a qualitative analysis to improve students' and athletes' mechanics.

A common misconception of mental skills training programs lies in thinking that mental skills training is only for elite athletes. Some teachers and coaches refuse to develop a mental skills program because they do not believe in or fully understand its benefits. Still other teachers and coaches are intimidated by the vast amounts of mental skills available for use in enhancing physical activity. These false impressions keep many teachers and coaches from providing a solid foundation of mental skills that can be carried on by their students and athletes and used not only in sport and physical activity, but perhaps more importantly, in life. The skills of goal setting, self-talk, relaxation, and imagery are the foundation on which a mental skills program is often built. It may be overwhelming to look at four skills that are not currently incorporated into a program or curriculum. Teachers and coaches are often left thinking, "These skills sound great, but where do I begin?" The best way is to pick one skill and begin perfecting it. With regular practice of the skill, it can become integrated into everyday life-leaving room to begin working on a second, third, and fourth skill.

Goal Setting

Goal setting is one of the simplest mental skills to learn and incorporate into an existing program. Goal setting is important in that it can provide a vision for students and athletes, directing effort and attention, as well as aid in enhancing motivation (Locke & Latham, 1990). It provides teachers/coaches and their students/athletes a way to concentrate on what is to be achieved through participation and helps them make a plan for achieving it.

Goal setting directs one's attention and increases confidence and motivation. In an effort to keep goal setting simple, researchers have suggested that "SMART" goals (Weinberg & Gould, 1999) are set. With the SMART plan, goals should be:

- * S = Specific; focus on a specific skill or technique.
- * M = Measureable; be able to see or measure the results.
- * A = Adjustable; goals should be flexible or changeable.
- * R = Realistic; goals should be the perfect challenge for the individual who is setting the goal.
- * T = Time-based; set a target date that the goal should be achieved by.

A simple way to incorporate goal setting into an existing program is to encourage students and athletes to set a SMART goal prior to every day's class or practice. From there, encourage students and athletes to set a goal prior to each activity or drill. They do not need to explicitly state the goal; this is an opportunity for the students/ athletes to focus their attention on what they would like to accomplish in the activity rather than passively going through each activity. By setting SMART goals, students and athletes can see success in each activity, practice, class period, or game. These small successes help to build confidence in students and athletes, helping to sustain motivation.

Self-Talk

Self-talk is what an individual thinks inside his or her head as well as words spoken out loud about performance (Landin & Herbert, 1999). There are two types of self-talk: positive ("I can do this") and negative ("I played horribly"). Positive self-talk can be used in a variety of situations including correcting bad habits, focusing attention, changing moods, increasing motivation, and building self-efficacy (self-confidence in a specific situation, such as shooting a free throw). Negative self-talk on the other hand, can create tension, stress, and anxiety, and ultimately set a student/ athlete up for failure. When students/athletes refer to themselves or their performance negatively, these thoughts can negatively affect performance.

Three techniques for changing negative thoughts into positive thoughts are thought-stopping, reframing, and affirmations (Zinsser, Bunker, & Williams, 2001). Following is a description of each:

* Thought-stopping → With thought-stopping the goal is to stop negative thoughts before they hurt performance. This is done by using cues to interrupt unwanted thoughts passing through the mind. Cues may be mental such as a cue word ("stop"), or physical such as snapping fingers.

* Reframing → Reframing is the substitution of a positive thought for a negative thought. An example of this technique is changing "How could I miss that shot?" to "Concentrate on the next shot." Notice how the new, positive thought redirects the student's/athlete's mind to the next task at hand, rather than focusing on the previous failed attempt.

* Affirmations → Affirmations are positive, confident statements that say yes to potential. Remember Stuart Smalley from Saturday Night Live ("I'm good enough, I'm smart enough, and 'dogonit' people like me.")-that is an affirmation! Affirmations should be personal (start the statement with the word "I"), positive (use positive wording, rather than "I won't" or "I don't want to..."), and in the present tense ("I am," "I do," "I have"). Affirmations are great for situations where students or athletes are having a hard time getting motivated or when they are having difficulty with a certain skill.

Turning negative thoughts into positive thoughts is a stepping stone for positive attitudes toward physical activity and the self, which can lead to life-long commitment and motivation in physical activity/sport.

Relaxation

Relaxation is a skill that can be used to combat tense muscles and stress in the classroom or on the court. When an individual feels his or her muscles tense up, it is usually because something is causing mental or physical stress. Most of the time, individuals are not even aware that their muscles are tense. Some things that the human body uses to show that an individual is tense are butterflies in the stomach, tenseness around the shoulders and neck, or legs that feel like "cement blocks." Because these reactions can hinder physical activity, it is important to learn how to physically relax to increase confidence and decrease the chance of injury in sport and physical activity.

An introduction to relaxation is simply deep breathing, by taking a deep breath in through the nose, and exhaling out through the mouth. During the exhale, the focus should be on releasing all of the tension in the muscles. Another type of relaxation is progressive muscle relaxation. This is when an individual tenses up a group of muscles (such as the shoulders) during the inhale, then holds the contraction for 10 to 15 seconds, and relaxes the muscles during the exhale. Again, the focus is on releasing all of the tension in the muscles during the exhale.

When practiced, relaxation can become automatic. This skill can also be used to excite the body. Rather than concentrating on relaxing during breathing, use the breathing to increase heart rate and respiration, in turn, exciting the body. Relaxation is a basic step in other training, such as imagery, concentration control, and stress management. Much like goal setting, this mental skill is a wonderful skill that can easily be taken from the physical activity setting to students' and athletes' everyday lives (see Cox, 2002).

Imagery

Imagery is the simulation of an activity in the mind (Vealey & Greenleaf, 2001). With training, it can be a useful tool to learn, practice, or improve motor skills, improve concentration, control emotional responses, and reduce anxiety. When imagining, the goal is to make the image as vivid as possible by using as many senses as possible. This includes using the visual, auditory, olfactory, tactile, and kinesthetic senses. It is also important to attach emotional moods to images such as excitement or confidence. Finally, imagine things that can be controlled-in controlling an image, an individual can make sure that the correct execution of skills is seen rather than the mistakes.

So how does one do imagery? Most importantly, imagery should be practiced in a comfortable setting. The beginning or end of practices/classes while students and athletes are stretching is an excellent time to practice imagery. Following is a short seven-minute imagery session that can easily be conducted during this time:

* 2 minutes → Begin by relaxing (see above) by using deep breathing or progressive muscle relaxation.

* 3 minutes → Next, choose one skill and imagine performing that skill perfectly. The skill may take the full three minutes, or a shorter skill can be chosen and performed multiple times during

the three minutes. Remember to keep a positive focus during the image, and try to imagine doing the skill as successfully as possible.

* 2 minutes → Wrap the session up by focusing again on breathing and relaxation and slowly returning back to the body's normal state.

Try to imagine the skill in real time; if serving a Volleyball normally takes 15 seconds, the image should take 15 seconds as well.

The most important piece to each of these skills is practice! Most people cannot pick up a basketball and make a three-point shot; instead the skill must be practiced, shooting day after day in order to become proficient at the skill. Mental skills operate in the same way in that they must be practiced in order for them to become easy to use and beneficial to students and athletes. Mental skills are exciting skills to incorporate into any program—they are skills that can be used not only in the physical activity setting, but in everyday life, helping students and athletes to use skills learned in physical education/sport beyond the playing field.

Using mental skills to enhance performance is only half of the M&M approach. Students and athletes must also physically perform the movements. Mechanical strategies provide the teacher/coach with systematic ways to help the performer improve his or her technique and outcome. Most teachers and coaches are familiar with giving feedback but do not adhere to a specific procedure. A qualitative analysis is a systematic process designed to enhance the performer's skills. The teacher/coach receives two types of information following a performance: performer technique and performance outcome. Performance outcome tells the coach and performer the end result of the task (i.e., she made the shot), but does not say anything about how the task was completed. Performer technique is a description of the mechanics of the movement. Teachers and coaches believe that enhancing performer technique will have a positive influence on the performance outcome. A qualitative analysis involves a series of strategies that will influence the performer's mechanical skills.

Knudson and Morrison (2002) have written an in-depth book on performing a qualitative analysis and the authors of this article have adapted their techniques. A qualitative analysis is comprised of four phases that include: (1) preparation, (2) observation, (3), evaluation/diagnosis, and (4) intervention. Each phase is of equal importance and can be repeated if necessary. Teachers and coaches often follow the progression of these tasks, but perhaps do not realize they are following a qualitative analysis model. The following will outline each of the tasks and provide teachers and coaches with an in-depth explanation of each phase so they may better define the systematic approach many are already using.

Preparation

The preparation phase entails gathering information about the activity. There are many sources of information to gain knowledge of the activity. Personal experience is oftentimes the most user friendly mode of information used by coaches and teachers. They have performed the activity before teaching it and rely on what worked and didn't work for them. However, what worked for the teacher or coach may not work for their performer. Other sources of information include

obtaining expert opinions or reading scientific research. Once information about the activity has been obtained, critical features of the movement must be identified. These are the important aspects of the movement that could "make or break" a movement. Also within the preparation phase is obtaining knowledge of the performer. It is important to know the experiential, developmental, motivational, and emotional level of the performer to properly plan instruction. It is also important to limit cues to six words as this is the average short-term memory for people. Oftentimes coaches give too much information to the athlete and they forget it before attempting to perform the task.


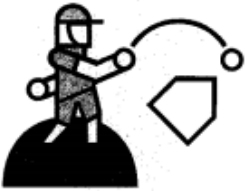
Observation

The second phase in a qualitative analysis is observation. One proposed strategy for observation (Knudson and Morrison, 2002) consists of five parts. Part one is the question of where to focus attention. The teacher or coach should focus on the critical features that were identified in the preparation phase and they must know when these critical features occur in the movement. Many movements occur too fast to pick up without knowing where to look for them. Part two deals directly with the situation in which the movement is being performed. Teachers or coaches should control as many outside variables as possible to ensure that their qualitative analysis is correct. Part three pertains to how to watch the movement. As a rule of thumb, the movement should be observed at a right angle to the plane of action of the motion. Observing movements diagonally could give the teacher or coach misperceptions of what the performer is doing. A viewing distance of 5 to 10 meters (Knudson and Morrison, 2002) or 10 to 40 meters (Hay and Reid, 1982) is desirable, depending on the speed of the movement and the constraints of the environment (e.g., gymnasium, classroom, therapy room). The nature of the movement needs to be examined before deciding on a number of observations (part four). Generally, five to eight observations are enough to produce reliable analyses. However, depending on the nature of the movement, considerations of how to extend the observation need to be made (part five). If the movement produces fatigue quickly, the use of video enhances the quality of the analysis. Using multiple observers is another way to extend the observation.

Evaluation and Diagnosis

The third phase is the evaluation and diagnosis phase. This is where another person (e.g., teacher, coach, peer) evaluates the strengths and weaknesses of the performance based on the observations made. Performer variability must be taken into account at this phase. There is not one set way to perform a movement. Teachers and coaches should create an acceptable range for the critical features during the preparation phase. This ensures that they aren't looking for the perfect way to perform the movement, just a correct way to doing it. Once the evaluation is complete, it is time for the diagnosis. The teacher or coach must decide which critical feature they want to focus on attempting to fix first, second, third, etc. An example of an evaluation/diagnosis assessment is in figure 1.

Figure 1. Softball Windmill Pitch (Right-handed pitcher)

		
Stance	YES	NO
1. Feet shoulder-width apart	—	—
2. Center of mass over left foot	—	—
Delivery		
3. Performer will end up completing approximately 360° rotation in sagittal plane	—	—
4. Slight flexion of knees	—	—
5. Center of mass moves forward and downward	—	—
6. Left foot pushes against rubber then comes up in unison with forward and upward swing of arms	—	—
Release		
7. Occurs as left foot begins to flatten	—	—
Follow Through		
8. Right arm will continue to rotate, but across body	—	—

Intervention

The final phase is intervention. This is a critical step in which the teacher or coach gives corrective instructions to the performer. Termed as "feedback," it can be informative, reinforcing, or motivational. Two main categorizations of feedback are knowledge of performance (KP) and knowledge of results (KR). The first category, KP, is information about how the performer executed the task, while KR is the outcome of the task. While both are important, KP has been shown to be more important in many experimental studies. After all, the student/athlete needs to know what he or she did wrong during the pitch, not just that the pitch was called as a ball.

There are several guidelines when giving feedback that many teachers and coaches neglect. Feedback needs to be limited and specific. Too much and too general feedback does not give the performer a clear indication of what needs to be corrected. Feedback needs to be immediate and positive. Waiting too long to provide feedback may cause the performers to forget what they did in the first place, while negative feedback can easily be rephrased as positive. Lastly, feedback should be frequent with cue words and provided within as many different modes as possible.

Frequent feedback lets the performer know what he or she is doing right or wrong and cue words limit the amount of information the performer needs to process. Feedback modes include kinesthetic, visual, and verbal forms of instruction. Using as many of the feedback modes as possible is beneficial to the performer. Following the intervention phase, it is important to repeat the observation and evaluation/diagnosis phases to see if the intervention phase worked. The observation, evaluation/diagnosis, and intervention phases are repeatable as many times as necessary to get the performance outcome desired.

Conclusion

In summary, it is important to treat teaching and coaching skills as a holistic issue. The M&M approach integrates both the mental and physical (mechanical) aspects of movement. Oftentimes teachers and coaches are tempted to only provide physical feedback because that is what they are most familiar with. However, feedback is commonly based on past experiences or limited practice. A qualitative analysis provides a systematic approach to teaching and coaching skills. This ensures that teachers and coaches are covering all their bases when discussing physical skills. Although physical skills are essential to the performance, mental skills prepare the performer for the skill and guide the performer through the skill. The examples listed are simple ways to incorporate mental skills into teaching and coaching. An integration of both mental and mechanical skills (the M&M approach) will provide the performer with the best chance to succeed.

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