

VISUOMOTOR BEHAVIOR REHEARSAL

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VISUOMOTOR BEHAVIOR REHEARSAL (VMBR)

Primary Disciplinary Field(s): Sport Psychology, Cognitive Psychology, Performance Enhancement

1. Core Definition

Visuomotor Behavior Rehearsal (VMBR) is a sophisticated and systematic psychological skill training technique engineered to enhance performance, primarily within competitive and athletic environments. It is defined as a structured methodology that rigorously integrates two distinct but mutually reinforcing components: **progressive relaxation** and **mental imagery** (or visualization). Unlike simple mental practice, VMBR emphasizes achieving a deep state of physiological and cognitive calm before initiating the mental rehearsal of a specific skill or performance sequence. The ultimate goal of VMBR is to optimize an individual's readiness, improve motor skill execution, and effectively manage performance anxiety, thereby bridging the gap between an athlete's physical capability and their psychological state during competition.

The systematic nature of VMBR requires the performer to engage their cognitive resources fully while their body remains in a relaxed, receptive state. This combination ensures that the mental simulation occurs without the interference of tension or distress. For example, as the source content suggests, tennis players often use VMBR by first achieving relaxation and then mentally reviewing successful past performances or executing a challenging shot sequence perfectly in their mind. This technique allows the athlete to refine motor programs and increase **self-efficacy** without the physical exertion or risk of injury associated with repetitive physical practice.

2. Etymology and Historical Development

The origins of VMBR can be traced back to the foundational work in two separate areas of psychology. The first is the development of **progressive relaxation**, pioneered by Edmund Jacobson in the 1920s, which demonstrated that systematic tensing and releasing of muscle groups could lead to profound bodily calm. The second area is the general concept of **mental practice** or imagery, which had been utilized informally by performers for centuries but gained psychological credibility in studies throughout the mid-20th century.

Visuomotor Behavior Rehearsal, as a distinct, formalized technique, was primarily developed and articulated by psychologist **Richard Suinn** in the 1970s. Suinn synthesized Jacobson's relaxation methods with mental imagery research, creating a packaged approach specifically tailored for competitive athletes struggling with stress and performance consistency. Suinn's work with the U.S. Olympic Ski Team brought VMBR into prominence, demonstrating its utility in high-pressure situations where physical practice might be limited by environment or fatigue. His framework

ensured that the visualization component was robust, multisensory, and conducted under optimal physiological conditions, thus ensuring maximum transfer to actual physical performance.

3. Underlying Psychological Mechanisms

The efficacy of VMBR is supported by several psychological and neuroscientific theories that explain how mentally rehearsing a physical skill can improve actual execution. One of the central tenets is the **Functional Equivalence Hypothesis**, which posits that motor imagery activates neural networks in the motor cortex, premotor cortex, and cerebellum in a manner remarkably similar to the actual physical execution of the movement. This neural overlap suggests that mental practice acts as a form of "neural conditioning," strengthening the motor program or schema associated with the task.

Furthermore, VMBR operates by effectively managing **competitive anxiety** and regulating physiological arousal. The initial phase of progressive relaxation serves to lower somatic anxiety (physical symptoms of stress, like elevated heart rate or muscle tension), bringing the athlete to an optimal zone of functioning. Once relaxed, the visualization phase allows the athlete to rehearse coping strategies and successful outcomes in a low-stakes environment. This rehearsal strengthens cognitive control, enabling the athlete to maintain focus and composure when faced with real-world competitive stressors.

The technique also relies heavily on the principles of **psychoneuromuscular theory**, which suggests that vivid imagery produces minute, detectable electrical impulses in the muscles involved in the imagined action. Although these impulses are insufficient to produce actual movement, they are thought to reinforce the neuromuscular pathway, acting as a form of subliminal practice that solidifies the connection between the brain's intent and the muscle's action.

4. Key Components and Implementation Phases

VMBR is typically executed in a structured sequence involving three primary stages, emphasizing controlled transition between relaxation and active mental rehearsal.

Phase I: Progressive Relaxation (Induction): The session begins with the athlete performing a comprehensive progressive muscle relaxation routine, often guided by audio cues. This phase requires the systematic tensing and releasing of major muscle groups throughout the body (e.g., hands, arms, face, torso, legs). The goal is to achieve a profound state of deep physical relaxation, characterized by lowered heart rate, slower breathing, and absence of muscle tension, which prepares the mind for effective visualization.

Phase II: Imagery Training and Rehearsal: Once optimally relaxed, the athlete transitions into the visualization phase. The imagery must be detailed, multisensory, and typically goal-oriented. The athlete should utilize visual, auditory, tactile, and kinesthetic senses to make the experience

as realistic as possible. They might rehearse specific skills (e.g., a golf swing), tactical maneuvers (e.g., defensive positioning), or entire competitive scenarios. Successful implementation often requires the athlete to adopt both **internal perspective** (seeing the world through their own eyes) and **external perspective** (watching themselves perform successfully).

Phase III: Application and Integration: In this final stage, the athlete practices transitioning out of the relaxed state while maintaining the positive feelings and motor programming reinforced during the rehearsal. They may also practice applying VMBR components quickly--using brief relaxation cues followed by rapid visualization--as a quick pre-performance routine immediately before a real event.

5. Applications in Sport and Performance

While VMBR was initially popularized within high-level athletic contexts, its application has expanded significantly to any area requiring precise motor skills under pressure.

Athletic Performance Enhancement: VMBR is widely used to improve the consistency of complex closed skills (e.g., gymnastics, diving, free throws) and open skills (e.g., soccer, wrestling). It is highly effective for pre-performance mental preparation, allowing athletes to mentally "warm up" and solidify their game plan immediately before execution.

Injury Rehabilitation: Athletes recovering from injury often use VMBR to maintain motor skill proficiency during periods of forced immobility. By mentally rehearsing movements, they mitigate the decline in muscle memory and motor control, facilitating a smoother transition back to physical training.

Non-Athletic High-Stakes Fields: Professionals in fields such as performing arts (musicians, dancers), public speaking, and even surgical training utilize techniques derived from VMBR. Surgeons, for instance, may mentally rehearse complex operative procedures to enhance precision and reduce cognitive load during the actual operation.

Stress Management and Focus: Beyond motor skills, the relaxation component of VMBR is a critical tool for managing general competitive stress, improving concentration, and rapidly returning to a state of focused calm following a mistake or setback during a competition.

6. Empirical Evidence and Efficacy

A substantial body of empirical research supports the effectiveness of VMBR, frequently demonstrating superior outcomes compared to control groups that receive no intervention or groups that receive only relaxation training or only imagery training. Studies often show that the synergistic combination yields the strongest results.

Meta-analyses conducted across decades of sport psychology research indicate that VMBR significantly contributes to improvements in strength, endurance, movement speed, and accuracy.

The greatest gains are often observed in tasks that require cognitive processing and precise timing, supporting the theory that VMBR enhances the cognitive or central component of the motor skill. Furthermore, research consistently shows that VMBR is highly effective in increasing an athlete's sense of **performance confidence** and reducing state anxiety immediately prior to competition.

However, the level of efficacy is often contingent upon several factors, including the athlete's commitment, the vividness of their imagery ability, and the specific structure of the rehearsal protocol. The inclusion of kinesthetic imagery--feeling the movement--is often correlated with higher success rates than purely visual imagery, underscoring the importance of making the rehearsal experience truly multisensory and integrated.

7. Variations and Related Techniques

While VMBR represents a specific, integrated protocol, several related techniques exist, sometimes used independently or as modifications of the core VMBR framework:

Mental Practice (MP) or Imagery Training: This focuses solely on the visualization component without the formalized deep relaxation induction. MP can be effective but may be less successful if the performer is highly anxious, as cognitive interference may reduce the quality of the imagery.

Applied Relaxation (AR): This technique focuses primarily on learning to rapidly apply relaxation skills (e.g., cue-controlled relaxation) in stressful situations, often without the specific motor imagery component. It is primarily a therapeutic tool for anxiety management.

PETTLEP Model: This is an advanced conceptual framework for structuring imagery, ensuring it is maximally effective by matching the mental rehearsal to the physical performance across seven key dimensions: **Physical, Environment, Task, Timing, Learning, Emotion, and Perspective**. While not a replacement for VMBR, PETTLEP provides guidelines for optimizing the quality of the imagery within the VMBR session.

8. Limitations and Criticisms

Despite its proven efficacy, VMBR is subject to several practical and theoretical limitations. A primary critique concerns the difficulty in ensuring fidelity and adherence. VMBR requires significant time commitment and consistency, and many athletes struggle to integrate the technique into an already demanding training schedule.

Furthermore, the effectiveness of VMBR is highly dependent on the individual's inherent ability to generate vivid and controllable mental images (their **imagery ability**). Individuals with poor imagery skills may derive minimal benefit, regardless of the quality of the relaxation induction. Researchers have also noted the "chicken-or-the-egg" problem: it can be difficult to definitively separate the performance benefits derived solely from the psychological benefits of deep

relaxation (e.g., reduced anxiety) versus the cognitive benefits derived from the motor imagery component. Finally, VMBR may be less suited for novice learners who lack a strong, correct physical motor program to visualize; practicing a flawed movement pattern mentally can reinforce errors.

Further Reading

[Visuomotor Behavior Rehearsal \(Wikipedia\)](#)

[Progressive Muscle Relaxation](#)

[Mental Practice and Imagery Training](#)

[American Psychological Association \(APA\)](#)

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