

Mirror Visual Feedback (MVF) & Phantom Limb Assessment

An overview assessing patients with phantom limb pain and applying mirror box therapy – covering patient screening, phantom assessment, treatment stages, and observed outcomes.



PATIENT ASSESSMENT

Psychological Screening

PTSD Screening

Identifying post-traumatic stress disorder prior to treatment planning.

Organic Depression

Assessment for delayed organic depression as a distinct clinical presentation. Depression lowers pain threshold.

Dysmorphic Distress

Evaluating body image disturbance and dysmorphic distress in amputees. See: Alex Lewis www.alex-lewis.co.uk

Secondary Conditions

Screening for secondary depression, anxiety, and pre-morbid conditions that may complicate treatment.

Also, differential and concurrent diagnostics such as neuroma stump pain, bone pain etc.



PHANTOM ASSESSMENT

Assessing the Phantom Limb

Remapping Phenomena

Identifying sensory remapping – where stimulation to the cheek, neck, or throat elicits sensation in the phantom hand or forearm.

Eliciting the Phantom Image

Establishing the patient's subjective experience and perception of their phantom limb.

Position & Contractures

Determining the resting position of the phantom and whether contractures are present – critical before any MVF attempt.

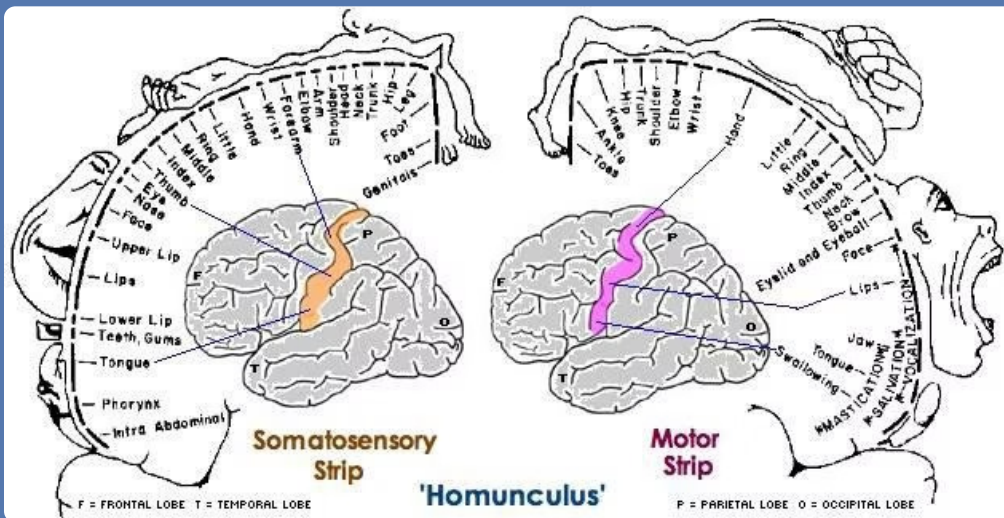
Mobility of the Phantom

Assessing the degree of voluntary movement the patient perceives in the phantom limb.

When Does the Mirror Box Work?

Arm vs. Leg

MVF is invariably more effective and dramatic with a phantom arm. Below-knee amputations show greater success than above-knee cases.



The Role of Remapping

Where sensory remapping occurs – stimulation to the cheek, neck, or throat eliciting phantom hand sensation – the mirror box approach is invariably successful. Where no remapping occurs, results are less significant, incomplete, or entirely absent.

i The clinical reason for this correlation remains unknown (by Andy).

Nerve Pain, Stump Pain & Common Pitfalls

Where pain is caused by nerve pain or stump pain, the mirror box is of little benefit. Many patients – and clinicians – find it difficult to differentiate between stump pain and phantom limb pain. Both issues may coexist in the same patient, complicating diagnosis and treatment.



Setup Errors

Therapists most commonly fail because the phantom is not correctly positioned before use. The phantom must be manipulated into a forward-facing position before the box is employed.



Total Illusion Required

Even small disruptions – such as a wristwatch on the remaining wrist – can break the illusion. The visual effect must be total and convincing to achieve benefit.



Limb Length Mismatch

Success vastly increases when the remaining arm mirrors the phantom's position. Phantom legs often differ in length from the remaining limb, reducing effectiveness.



TREATMENT STAGES

Stages of the MVF Treatment Session

Each mirror box session follows a recognisable progression. Understanding these stages helps clinicians guide patients effectively and anticipate responses.

TREATMENT STAGES

Early Stages: Expectation to Reaction

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Expectation & Anticipation

The patient enters the session with heightened awareness and anticipation of the therapeutic effect.

2

Focus

Attention is directed entirely to the mirror image, engaging the visual system to override proprioceptive conflict.

3

Reaction

The initial therapeutic effect occurs – often accompanied by an overwhelming but not unpleasant release of emotion.

Later Stages: Reunion to Fatigue



Emotional Reunion with Limb Image

A profound reconnection with the lost limb's image. The patient feels pleasantly different. This emotional intensity does not typically recur in subsequent sessions.



Fascination & Exploration

The patient actively explores the phantom's new perceived position and movement, often with curiosity and engagement.



Abreactional States

Intense emotional release may occur as suppressed responses to the amputation are processed through the visual feedback experience.



Fatigue

The session concludes as the patient experiences cognitive and emotional fatigue from sustained visual and neurological engagement.



OUTCOMES

Results: Telescoping Phenomena

One notable outcome observed following mirror box sessions is the **telescoping phenomenon** – where the phantom limb appears to retract or shorten, drawing closer to the stump. This perceptual shift is considered a significant neurological response to MVF and is closely associated with positive therapeutic outcomes.

Telescoping reflects the brain's capacity to remap and reorganise its body schema in response to visual input, reinforcing the neuroplastic basis of MVF therapy.

Key Observation

Telescoping is a marker of successful cortical remapping and indicates that the mirror illusion has engaged the relevant neural pathways effectively.

SUMMARY

Key Clinical Takeaways



Screen Thoroughly

Assess for PTSD, depression, anxiety, and pre-morbid conditions before commencing MVF.



Position is Everything

The phantom must be correctly positioned before the mirror box is used. Setup errors are the primary cause of failure.



Remapping Predicts Success

Sensory remapping to the cheek or neck is the strongest predictor of a positive MVF outcome.



Expect Emotional Stages

Sessions follow a consistent arc from anticipation through to fatigue – prepare patients accordingly.