

THE USE OF PLUS/PLUS ACCOMMODATIVE ROCK IN VISION THERAPY

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Abstract

Flipper accommodative rock has served as an integral part of vision therapy for a significant number of binocular conditions. It is classically performed with convex lenses on one side of the flipper, and concave lenses on the other (+/- rock). In this article the author suggests that the use of this technique can exacerbate certain conditions. He proposes a method for accommodative rock to be done with convex lenses on both sides of the flipper (+/+ rock) for these conditions, and its use at the end of certain vision therapy protocols.

Key Words

accommodative infacility, accommodative excess/spasm, convergence excess, convergence insufficiency, flippers, plus acceptance, plus/minus accommodative rock, relaxation techniques, vision therapy

INTRODUCTION

The visual accommodation and vergence systems function in synkinesis; activation of the one affects the other. Because of this, the evaluation of each system is an integral part of the primary care optometric evaluation.¹

Among the five areas that Goss has recommended to be included in the assessment of accommodation is accommodative facility.² This has been defined as:

*...a measure of the ability of the eye to alter its accommodative status. This is a measurement of the quality of the eye's ability to smoothly and efficiently change the amount of accommodation...*³

The most common method of assessment of accommodative facility has been, and is, the use of convex 2.00 diopter lenses mounted on one side of "flippers", and concave 2.00 diopter lenses mounted on the other. The target print to be cleared is usually positioned at 40 cm from the patient.^{3,4} Various methods of testing and standards of cycles per minute have evolved for the evaluations of monocular and binocular accommodative facility.³⁻⁵

Accommodative rock is a primary optometric technique for the treatment of accommodative disorders. This treatment can consist of changing lens powers or shifting focus to different distances. Other variations have evolved including the use of anaglyphs, Polaroids, or prism dissociation systems. Many techniques involve flipper mounted convex (plus) lenses on one side, and concave (minus) lenses on the other. The recommended

sequence of therapy has been to proceed from monocular to bi-ocular to binocular, with the power of the concave lenses being no more than one half the patient's amplitude of accommodation. The convex lens power depends on the distance of the target to the patient. In this +/- accommodative rock technique the initial lens powers are determined by the patient's ability to maintain clarity of vision with each flip. Then, increase the lens power incrementally to the desired endpoint.⁶

This +/- rock technique has been shown to be an effective vision therapy intervention for accommodative infacility as well as other anomalies of the accommodative system.^{1,6-9} However, I propose that, in the following conditions, +/- rock initially may not be the most effective treatment modality:

- Accommodative Excess (AKA Accommodative Spasm)

In this condition the accommodative response exceeds the accommodative stimulus.¹⁰ Application of minus, during monocular or binocular phases of therapy can exacerbate the excess.

- Conditions with a high Accommodative Convergence to Accommodation (AC/A) Ratios⁷

These can include: convergence excess, esotropias and esophorias. As with accommodative excess, the underlying over response of the accommodative mechanism can be exacerbated by the use of minus.

In these instances I have used +/+ rock in the initial stages of therapy. The goal of

the technique is to gradually foster a relaxation of accommodation, first monocularly and then binocularly.

Plus/plus (+/+) accommodative rock

Monocular phase

I have had flippers produced in the following combinations for pre presbyopic patients: +.50/+1.00; +0.75/+1.25; +0.75/+1.50; +1.00/+2.00. I start this home based therapy procedure with the lowest level of accommodative relaxation demand (+.50/+1.00). The patient is seated and holds grade appropriate reading material at his Harmon distance (from elbow to first midknuckle).¹¹ During office therapy, one eye is occluded and the flipper is introduced. He is instructed: *clear the print on the line as quickly as possible and then flip the handle and do the same on the next line.* The patient then spends 3 to 5 minutes on the right eye for instructional purposes and is instructed to maintain proper posture after each flip. The occluder is then reversed and the procedure repeated for the other eye. When the patient can instantly clear and maintain clarity of the target print, for a time interval designated by the doctor, the next stronger lens combination is introduced. Any persistent blur at the beginning or at a later point in this orientation session indicates that the patient is attempting to over accommodate rather than relaxing her accommodative system; this indicates a mismatch in the response to plus. In this case, +/+ rock is deferred, and other treatment options to relax accommodation are instituted.

During the course of home therapy, it is not always necessary for the patient to complete the total range of flipper combinations in sequential order; this is at the discretion of the doctor.

I have found that most patients prefer to perform this home based therapy technique using a newspaper or book as the target. In this situation, they read a full paragraph, flip the lens holder, and then read the next paragraph. The instructions are altered appropriately.

Some patients may notice a subtle difference in magnification of print with each flip. I suggest that this is a reflection of a good level of visual awareness and discrimination. However, some may report a minification effect; this can indicate increased accommodation in spite of

the plus lenses, and is a contra-indication of +/- rock at this time.

Some patients experience prolonged or fluctuating blur with even the least demanding lens combination, or with the introduction of successive lens combinations. In these cases, I instruct the patient to hold the lens (or lenses) in position while they close their eyes. The patient then repeats "Relax 1, Relax 2" with me. When the patient opens his eye (or eyes), the print should be clear, and the clarity should be maintained. Any blur should act as direct feedback for the patient to repeat the relaxation sequence again. Additionally, I may utilize other progressive relaxation techniques that have been proposed for myopia control.¹² I have found the addition of relaxation to be an effective tool with even young children.

I specify that monocular +/+ rock be conducted for three to four minutes per eye, twice during the daily 30-minute home therapy program. The time allotted is dependent on the ease of gaining instant clarity and maintenance of clarity of the target print that the patient attains with the specific lens combination. Some patients find that it is more difficult to clear the print with one eye as opposed to the other. In these cases, the time is increased for the more impacted eye until performance is equalized..

Binocular Phase

The initiation of binocular +/+ rock is a decision that is made by the optometrist. It is dependent on the progress made during the monocular phase along with the patient's binocular skills status. The patient's sensory and motor ranges of convergence and divergence are of particular importance. The seating and instructions are the same as in the monocular phase with the addition of: *clear the print instantly and make sure that it isn't double, and then flip the handle.* I specify that this phase be conducted six to eight minutes, two times during each home therapy session.

+/+ Accommodative rock in accommodative insufficiency and convergence insufficiency

At first glance it might seem counter intuitive to utilize +/+ rock therapy for accommodative insufficiency (AI). However, I have observed that in the later phase of successful treatment of AI, clinical testing of some patients indicates that

their accommodative response has been over-trained; the lag of accommodation is now closer than the established criteria; the initial near point exophoria is now ortho- or even eso-phoria; the numerical values of positive relative accommodation (PRA) and negative relative accommodation (NRA) findings are now reversed from the initial findings. In most instances, this overreaction of accommodation will probably lessen after vision therapy (VT) is terminated. Nevertheless, I have used +/+ rock at this juncture to "restore a balance to the system."¹¹

I have also found that in the later phase of treatment for convergence insufficiency (CI) some patients' levels of plus acceptance at near are still reduced, similar to the AI scenario discussed above. Plus/Plus rock can serve to restore plus acceptance. Additionally, it can lessen the amount of accommodate convergence by promoting the need for increased fusional convergence. In addition to "restoring balance to the system"¹¹ it can serve to enhance the system.

SUMMARY

Plus/Minus accommodative rock has been included as an integral part of VT for many, if not all dysfunctions of binocular vision.^{7,13,14} Nevertheless, I have proposed that in certain cases it can serve to exacerbate the diagnosed dysfunction. In these conditions, +/+ rock is a more viable technique than +/- rock as the initial accommodative treatment. This type of rock also can serve to restore the balance within the accommodation vergence systems. It can also be used to enhance plus acceptance in the later phases of many successful VT programs. Plus/plus accommodative rock is a viable addition to the optometric therapy of common accommodative and binocular dysfunctions.

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