Special Addendum

User Instruction Guide for Proper Use of Smartphone Scoliometer Apps

By Dr. Brett Diaz, D.C.

Now Even Parents With No Medical Training Can Monitor Their Child’s Scoliosis At Home!
Introduction

A scoliometer app for your smart phone can be a useful tool to use to monitor you or your child’s scoliosis at home. It can be used before treatment to find out if there has been any progression or during treatment to monitor progress.

It is a simple but effective tool for monitoring a scoliosis, if you follow these simple guidelines on how to use it.

Scoliometer Apps

There are several different types of scoliometer apps available for both Android and iPhone. They range from Free to $6.99 for the most sophisticated type.

Click on the link below to find where to download scoliometer app. You can also read a review comparing the different types of scoliometer apps by reading the reviews below starting on page 9.

http://scoliosistreatmentalternatives.com/4120/review-of-scoliometer-smartphone-apps/

What Does a Scoliometer Measure?

The scoliometer measures the Angle of Trunk Rotation (ATR), which is the degree of rotation of a scoliosis. While a scoliosis may look like a simple side-to-side curve on X-ray, it also has a rotation component called the “Gibbosity”.

On an X-ray a scoliosis looks like it is a simple side-to-side curve but the body is 3-dimensional so as the scoliosis moves to the side it also curve rotates around much like a spring. As the spine rotates it carries the rib cage with it causing a rib hump on one side.

The relative measurement of the degree of rotation of the trunk is measured directly on the surface of the back with the patient bent forward at the waist. Normally both sides of the back will be even with each other. However, when a scoliosis is present the rotation in the spine can be seen when a patient is bent over at the waist, making the rib hump or lumbar hump on ones side more apparent. (See illustration below)
Normal Spine vs. Scoliosis

Research shows that there is a strong direct correlation between an increase in the ATR and the Cobb Angle, which is the measurement of the degree of curvature of the scoliosis on X-ray. (2) Therefore, the angle of trunk rotation can be used as a screening or supplemental monitoring tool to evaluate the progression or improvement of a scoliosis over time.

Scoliometer's are simply electronic inclinometers but they have been validated as a reliable and accurate tool for measuring the angle of trunk rotation, which can provide insight into the underlying spinal deformity. Studies show that when a parent was taught how to a scoliometer app on their smart phone to measure a spinal deformity it was as accurate as a spinal surgeon using conventional diagnostic techniques. (3)

One Challenge with Smartphone Measurements

The greatest challenge to measuring rotation accurately with a smart phone is holding it evenly on both sides so the measurement is a true reflection of the rotation of the trunk.

A standard scoliometer has a semicircle cut out in the middle of the device that allows for space for the bump of spine so as not to interfere with the measurement. Smartphones do not have such a cut out. (See below left)
While your smartphone doesn’t have a cutout for the spinous process built in you can easily adjust for that by holding the phone with your thumbs positioned at the bottom to allow for space for the bony spine. (See above right)

An alternative to using your thumbs is an attachment sold by a company in Canada called Spinologics that you can snap onto your smart phone that creates that space for the spinous process so that the device better conforms to the back to allow for more accurate readings. You can purchase it for around $27 at http://www.spinologics.ca/products/scolioscreen/
Step-by-Step Instructions on How to use a Scoliometer to Measure the ATR

1. Stand or sit directly behind the person you are measuring with their shirt off so that their bare back is exposed. Tight clothing like a sports bra can be used for modesty as long as it fits snuggly to the back.
2. Have the patient extend their arms out in front of them and bring their fingertips together so they are even with each other.
3. Then have the patient slowly bend forward until their shoulders are level with their hips and their hands are between their knees.
4. Place the scoliometer over the spine so that the 0° is directly over the spine.
5. The area that you are going to measure should be parallel to the ground and you should view the spine with your eyes at the same level as the back.
6. Run the scoliometer evenly over that portion of the back so that it is perpendicular to the surface.
7. The highest measurement found is the one you record for that curvature. If there are other curvatures in the spine repeat in that area and record the largest number there.
8. If there are 2 or more curves they will almost always rotate in opposite directions.

Video Link Instructions on How to Use a Scoliometer App to Measure the ATR

https://vimeo.com/120404941
Other tips to Increase the Accuracy of Your Scoliometer Measurements

1. Stand directly behind the patient when measuring the spine ATR.

2. Have patient place hands together so that the fingertips are even.

3. As the patient bends forward at the waist have them place their fingers between their knees, as best as possible, as they bend forward.

4. Have the patient bend over so the area you’re measuring is as horizontal as possible. Adjust their degree of bend to make that possible.

5. Run the scoliometer **slowly** down the back 3 times and record the largest degree of rotation at each of the curvatures in the spine. Then take the **average** of the 3 measurements.

6. Keep the patient’s head looking straight towards the ground as rotating the head can affect the accuracy of the reading.

7. If long hair is in the way, move it aside to allow for full view of the back.

8. Do not press down with the scoliometer on either side as it can distort the reading.
What to Do With The Results of Your ATR Measurements

Degree of Angle of Trunk Rotation gives an indicator if treatment is needed. The most significant finding is when a child with scoliosis is growing and there is a progression of the ATR beyond 6°, it is a significant finding that may indicate the need for treatment. A consultation is recommended right away as a scoliosis can worsen quickly during periods of rapid growth.

0° - 3° - Not Significant Rotation – No Treatment Indicated. Everyone’s spine has some measure of asymmetry that is considered within normal limits.

4° - 6° - Caution, especially if child is growing. No treatment needed yet but recheck in 2 weeks. Some doctors say any measurement over 5° should be considered for referral but more recent studies have increased that to over 6°.

>6° Concern. You should consult with a non-surgical scoliosis specialist, as treatment may be needed.

Progression >6° Greater Concern, especially if the scoliosis has had progressed further past 6°. You should start alternative scoliosis treatment right away.

Now you have the ability to monitor a scoliosis at home to check for any progression. If you have any questions regarding the need for alternative scoliosis treatment then please give us a call at (800) 943-1254 for a FREE phone Consultation.

* Disclaimer: Please note that the use of these scoliometer devices are not intended to be used for medical diagnosis or as a substitute for professional advice. The intended use of these devices is for educational purposes only once a diagnosis of scoliosis has been established by a health care professional. Only then should they be used for home monitoring to determine if there may be any signs of scoliosis progression in between visits to your medical professional. If there appears to be any signs progression of the scoliosis then you are recommended to seek further evaluation by your medical professional or another qualified health care provider. While there have been studies demonstrating the efficacy of these devices the author does not guarantee the accuracy of any individual device or the accuracy of the information provided by the individual app provider.

(1) Validation of a scoliometer smartphone app to assess scoliosis  http://www.ncbi.nlm.nih.gov/pubmed/23147635
(2) Relationship between gibbosity and Cobb angle during treatment of idiopathic scoliosis with the SpineCor brace  http://link.springer.com/article/10.1007/s005860000175
(3) Evaluation of an apparatus to be combined with a smartphone for the early detection of spinal deformities  http://www.scoliosisjournal.com/content/9/1/10
## Scoliometer Readings

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Review of Scoliometer Smartphone Apps

This review of Scoliometer Smartphone apps examines the features, benefits and costs of the current scoliometer apps on the market for both Android and iPhone devices. This way consumers can choose the ones that are best suited to their needs. It includes links to these apps so that once you’ve decided on the one that is best for you; you can download it to your smartphone.

A scoliometer is a simple digital inclinometer and the technology has been utilized in other smartphone applications. In this application it is used to measure the Angle of Trunk Rotation (ATR) in the Adams Test Position [http://youtu.be/1EPi3Pz6V0](http://youtu.be/1EPi3Pz6V0). This is for a patient who has already been diagnosed with a scoliosis by a qualified health care provider.*

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Scoliometer Apps for iPhone

To Download an App for your iPhone Search for “Scoliometer” in Either App Store or iTunes on your device
Scoliometer

$4.99 – Scoliometer by Health In Your Hands from Singapore is for both iPhone and Android. It is a straightforward scoliometer app that had an easy to read digital display and a step-by-step visual instruction guide on how to perform a proper Adam’s Test. It can measure ATR rotation up to 50°. This app has a pre-set level so no leveling is needed before use making it very easy for the consumer to use. Rating 4+

Scolioscreen

$0.99 – Scolioscreen by SpineLogic from Canada is for iPhones. It is a ready to use out of the box app that has a color-coded meter that indicates the level of concern. While the dial is a bit challenging to read on the fly, but it does have a nice color-coded indicator. Green for normal, Yellow is to retest in 1 month, Red recommends seeing a doctor. It can measure ATR rotation up to 45°
What I like best about this app is the optional **clip-on device for the bottom of your smartphone** that mimics the shape of a standard scoliometer. Price $27.10 While this add on is certainly more costly it does enhance the reliability of the measurement as there is a recess at the bottom to allow the device to avoid hitting the spine. (Other smartphone scoliometer apps require using your thumbs underneath the device to create a recess and if your thumbs are not even then your measurement could be slightly skewed.)

http://www.spinologics.ca/products/scolioscreen/

Rating 4+

**Scoliometer by Spiral Spine**

$4.99 – Scoliometer by Spiral Spine from the U.S. is for iPhones. It’s has a simple and straightforward interface that measures rotation up to 30°. This app also has a pre-set level it’s ready to go, making it very easy for the consumer to use.

Rating 4+
ScolioTrack

$6.99 – Scoliogauge is by Health in Your Hands from Singapore. This is definitely the current “Cadillac” of all scoliometer apps and is available for both iPhone and Android. It is a great use of technology and is far more than just a simple scoliometer with many bells and whistles. It can measure ATR rotation up to 30°. It not only allows for scoliometer measurements but it also allows you to store patient’s scoliosis data such as age, height, weight and a photo for that visit against a postural grid. It even allows you to graph the results over time.

This could be helpful for professionals who is tracking a large number of scoliosis patients and is seeking to document changes over time. It may be a bit of overkill for the parents only tracking their own child. The fact that the device must be calibrated on a flat level surface before each use is a mild annoyance but likely helps with accuracy, assuming you have a perfectly level surface nearby.

Scoliogauge

This was a good scoliometer app put out by Ockendon.net that I have used in the past and written about previously. For some unknown reason it appears to have been taken off the market and is no longer available.
Scoliometer for iPads

To Download an App for your iPad Search for “Scoliometer” in Either App Store or iTunes on your device

Scoliometer HD

$4.99 – Scoliometer HD by Health In Your Hands from Singapore is for the iPad.
Like it’s iPhone counterpart this is a straightforward scoliometer app on a much larger screen that makes it easier to read the digital display. It too has a step-by-step visual instruction guide on how to perform a proper scoliometer evaluation. It can measure ATR rotation up to 50°. This app has a pre-set level so no leveling is needed before use making it very easy for the consumer to use.
Rating 4+
Scoliometer Apps on Android

To Download Apps for Android Chuck On The Link Below:

Scoliometer

$3.18 – Scoliometer by Health In Your Hands from Singapore is for both iPhone and Android.

It’s a straightforward scoliometer app with an easy to read digital display and step-by-step visual instructions on performing a proper scoliometer app. It can measure ATR rotation up to 50°. This app has a pre-set level so no leveling is needed before use making it very easy for the consumer to use.
Rating 4+
Scolimetr

FREE – Scolimetr by uFizjo.pl – sklep fizjoterapeuty from Poland is for Android.

It has a simple digital display that only reads a digital display of the measure of ATR. The device requires calibration at the onset but not after that. It is a bare bone scoliometer app but seems to still do the trick.
Rating 3.7

Scoliosis Measurement

FREE – Scoliosis Measurement by YMED from Korea is for Android. Even though this app is Free I would not recommend it. To take a reading requires that you push an icon while you are measuring, which is awkward and is likely to throw off your measurements accuracy. It has also been reported to crash a lot at start up.
Rating 3.2
Scoliometer Screenshots

FREE – Scoliometer Screenshots by FleeOn from Korea is for Android. Although I was able to download this app for Free I can’t recommend this it at all as I was unable to get it to operate properly after a half hour of trying.

ScolioTrack

$6.99 – Scoliotrack is by Health in Your Hands from Singapore. This is definitely the current “Cadillac” of all scoliometer apps and is available for both iPhone and Android. It is a great use of technology and is far more than just a simple scoliometer with many bells and whistles. It can measure ATR rotation up to 30°. It not only allows for scoliometer measurements but it also allows you to store patient’s scoliosis data such as age, height, weight and a photo for that visit against a postural grid. It even allows you to graph the results over time.

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User Guide for Smartphone Scoliometer Apps for Home Monitoring of Scoliosis

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