



# A better scoring/hierarchy for the FMS.

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## Disclaimer

*It has taken me 4 years to write this. In that time, this is the first draft that I didn't immediately delete. Why? I was mad. I was hurt. I felt betrayed. I was unable to separate my emotions from the message I was trying to write, and tone reflected that. My inability to separate emotion from the message means that what you will read here is 5+ years old. For that, I apologize.*

*I have used the FMS™, in the rehab world and the strength and conditioning world since 2001. At the height of my use of the FMS™, the SFMA™, and the FCST™, every individual that walked into the Sports Medicine and Sports Performance facility that I oversaw went through one of the movement screens. Often multiple times. Personally, I've screen thousands of individuals. At one point, I was a part of Functional Movement Systems, Inc. as an instructor. In 2016 I ended my relationship with Functional Movement Systems, Inc. Why? You will likely get two different stories, but at the end of the day FMS Inc. did not hold up their end of an agreement and blamed me for it. Individuals I trusted and considered "friends" showed their true character. I was not innocent in the events - I got mad and said things. It was clearly unsalvageable, so I walked away. In hindsight, as hard as that was to do, it was the best thing to happen to me in my entire career.*

*At the time, I was working on developing solutions to some issues that many end-users of the Functional Movement Screen encounter on a routine basis. I continued to work on and refine this project. Once this project was completed and had been thoroughly tested, I was presented with a moral dilemma: What do I do with this information? Keep it to myself, give it to Functional Movement Systems, Inc., or do something else with it. This is a question I have wrestled with for the past 4 years. I did reach out the FMS, Inc. While there was interest from individual members of their leadership, ultimately, the discussion fell silent on their end. So, this and data from 5,000 screens sat on my desk for another a year.*

*Today, I've decided to release the information. If the information is useful, great. If the information does not help, great. Either way, I asked questions and am attempting to move the needle of the movement industry. This in no way implies that what is presented by FMS, Inc. does not work. The FMS™, is useful; I'm just trying to make it more efficient.*

*This is all I ask - **try it**. Researchers - take all of your research data from the FMS™ and apply the filters I've laid out. Re-examine your data on the FMS™. Coaches, trainers, and healthcare professionals - adjust the corrective hierarchy and see how your results change. Then apply the filters I've laid out to get a more complete picture of the individual you are working with. Just try it. Prove this approach wrong, find the flaws, find the gaps, and then develop the solutions. That is how we push this industry forward; that is how we lead up and influence change — Enjoy!*



## Better Scoring

As a user of the Functional Movement Screen (FMS™) for 15+ years, over time, clear and consistent "gaps" kept coming up in the day-to-day utilization of this movement assessment tool. 150+ research articles have been published on multiple aspects of the FMS™, and frankly, many are horrible. However, from a research standpoint, there is only one objective variable that can be genuinely assessed - the total score. Researchers have done the best they could do with what they had, but that was not a lot. In defense of Functional Movement Systems, Inc. (FMS Inc.), at no point did they ever say that the total score was significant. Corporately, the emphasis is placed on using the FMS™ as a tool to determine an individual's movement baseline and then moving better. When asked, the goal of movement was always "all 2's no asymmetry." There was a disconnect between FMS Inc. and everyone else. It did not take a Ph.D. in mathematics for researchers and end-users to calculate that "unofficially," a minimum total score of 14 was the objective.

There are multiple ways to score a 14:

<i>table 1</i>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
<b>Overhead Squat</b>	2	3	2	2	3	1
<b>Hurdle Step</b>	2/2	2/2	2/2	3/3	0/0	2/3
<b>In-Line Lunge</b>	2/2	2/2	2/3	3/3	1/1	2/3
<b>Shoulder Mobility</b>	2/2	1/1	2/2	3/3	3/3	3/3
<b>Active Straight Leg Raise</b>	2/2	2/2	2/2	1/1	3/3	3/3
<b>Trunk Stability Push-up</b>	2	2	2	1	3	1
<b>Rotary Stability</b>	2/2	2/2	2/2	1/1	1/2	2/3
<b>TOTAL SCORE</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>

The six examples above help to show that all 14's are not created the same. Which one of the above individuals should keep doing what they are doing? Which of the above individuals need to scale their training/sport participation back while working to clean up some issues? Which of the above needs an actual evaluation by a medical professional? When looking at these 6 examples, those questions are easy to answer. However, what if the spreadsheet being assessed is made up of the 122 players on the football team? Or the 18 players on the men's basketball team, plus the 19 players on the women's volleyball team and the 22 members of the golf teams? (59 total). Looking at each score in individuality works well in certain situations (1-on-1 personal training, small group training). Still, there is a large group of FMS™ users that fall into the above scenario [see Appendix 2 for more info on this]. Add into those researchers



analyzing the data (total score) from the FMS™, and many end-users live in a world of analyzing trends, not individual scores.

Another issue is showing progression between the initial test and a retest. There are many stories of instances where clients started at a score, and later on a retest, they get the same score. For example, assume that Grandpa Gene's initial evaluation was example **D** from table 1 above. Fast forward 6 weeks. Over that time, he is doing more in less time, and he feels better. He moves better, and all around, he is thrilled with what he has achieved in 6 weeks. Then, the FMS™ is redone to show an objective improvement, to support these subjective feelings that Grandpa Gene has been sharing with everyone. His follow up score is now example **A** in table 1. Any FMS™ end-user can see that he has improved, but in 6 weeks, he went from a 14 to a 14. Grandpa Gene only understands that he is the same today as he was 6 weeks ago. The worst-case scenario is that he quits. The best case is that he perseveres, but that seed of doubt is now planted in the back of his mind about the abilities of the person working with him...

Many justifications can be developed to explain this away, but something else also has to be considered. That something else is that the original FMS Inc. scoring system is incomplete in today's world. The variety of justifications used to explain this away suggests some imperfection in the principles behind the scoring system.

Justifying this gap in scoring is not a problem; in fact, it should lead to a better understanding of the scoring process for the end-user. Unfortunately, this is a problem that continually arises every day as more individuals use the FMS™ tool. The problem is that this continues to be a hassle for end-users, and it is not being addressed at the higher levels. Einstein is credited with the quote: *"The definition of insanity is doing the same thing over and over again, but expecting different results."* It is time to fix the issue, or at least move the discussion in that direction.

The Better Scoring/Hierarchy system is one way that this can be accomplished. It allows for better filtration and sorting of total scores to assist the end-user in making global decisions and to more sensitively show progression. The "Better Scoring" portion does what has needed to be done for a long time:

1. It gives researchers more objective data to analyze.
2. It gives end-users more data points to make critical decisions for the individuals they work work AND global decisions for large groups.
3. It allows individuals to see objective data to support the hard work they have put in to improve their movement ability.

Most importantly, this adjusted scoring approach addresses all three without making a single change to how the FMS™ is administered or in how it is scored. The changes occur afterward. They come from a new scoring sheet and calculations that are performed within the scoring sheet, not from any alterations from the end-user. The only adjustment in the process is the need to enter scores into a Numbers or Excel file instead of on paper.



The algorithms utilized to calculate the new scores have been tested on 10,000 + FMS™ scores, and immediately categorizes each of those 10,000 individuals into one of three categories:

- **Quadrant 3: Protect**- Q3 individuals need reduced exposure time and a significant corrective strategy (correctives before/after participation and scaling of workouts/training/sport participation). Their movement is putting them at risk and limiting their performance. The top priority for Q3 individuals is protection. They need to avoid as many things (training, habits, lifestyle, or occupation) that are contributing to their poor movement quality. Completely removing everything that contributes to this is not reality. Having a tool to start the conversation about being aware of what it is that ‘they’ are doing that is contributing to their movement is an excellent first step. It must at least be considered that Q3 individuals have an underlying health issue that is their top priority.
- **Quadrant 2: Correct** - Q2 individuals need scaled/modified participation as well as a detailed corrective plan. Q2 individuals can benefit from a well prepared corrective strategy that targets their movement issues explicitly. At the same time, modifying any training that they do to scale those activities/lifts/exercises that conflict with their movement profile. Q2 individuals have a movement problem, which can be addressed by moving more, but within certain individualized limitations. Q2 has 2 subgroups; **Quadrant 2a** and **Quadrant 2b**. Each reflects a different issue, but both are addressed with the same ‘correct’ mindset. Q2a individuals have high FMS™ scores (above the movement minimum baseline of 14) but a lot of asymmetry exists. Q2a individuals have many scores of 2/3. Q2b individuals tend to score below the minimum movement baseline of 14, but have relatively few asymmetries. Q2b individuals have many 1’s or many 1/1 scores. In the old-school approach Q2a individuals tend to be stability/motor control problems while Q2b individuals tend to fall into the mobility category of deficits.
- **Quadrant 1: Develop** - keep doing what they are doing. Q1 individuals need a thorough general warm-up and should progress right into their training. Spending time on correctives is not the most efficient use of their time. Q1 individuals have a fitness issue. These individuals could likely benefit from further fitness testing to develop a better training plan for them beyond the FMS™.



Determining quadrants is accomplished by adding a second data point to the original total score.

<i>table 2</i>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
<b>Overhead Squat</b>	2	3	2	2	3	1
<b>Hurdle Step</b>	2/2	2/2	2/2	3/3	0/0	2/3
<b>In-Line Lunge</b>	2/2	2/2	2/3	3/3	1/1	2/3
<b>Shoulder Mobility</b>	2/2	1/1	2/2	3/3	3/3	3/3
<b>Active Straight Leg Raise</b>	2/2	2/2	2/2	1/1	3/3	3/3
<b>Trunk Stability Push-up</b>	2	2	2	1	3	1
<b>Rotary Stability</b>	2/2	2/2	2/2	1/1	1/2	2/3
<b>TOTAL SCORE</b>	<b>14-0</b>	<b>14-2</b>	<b>14-1</b>	<b>14-5</b>	<b>14-5</b>	<b>14-5</b>

The second score is the “At-Risk” Score. UNDERSTAND THIS: the second score is a second individual score, not a decimal or an addition to the first score. Zero is perfect. The higher the second score, the more risk factors are present within the FMS™ score. What is considered as a risk variable is one of the following, all of which have been discussed extensively in research:

- An asymmetry between scores on the left side and right side( 1/2, 1/3, 2/3, 0/1, 0/2, 0/3).
- Falling below minimal expectations (anything less than a 2).
- A score of 0 (indicating pain on the test).

Currently, each risk factor has to carry the same weight. There is no objective way to say which of these 3 risk factors increases an individual risk more than the other two. This might change over time, but currently, there is no research to support anything other than equal consideration.

Once the FMS Inc. total score is obtained, and the At-Risk score is obtained, these 2 data points can be plotted on a graph to determine the Quadrant of the individual. If an entire team's data is plotted, evident trends can be seen regarding how the team is responding to the practice/training philosophy and schedule. The Vertical Y-Axis reflects the FMS™ total score. The cutoff for the FMS™ total score was set at the "unofficial" 14 that research promotes and end-users target. The Horizontal X-axis represents the At-Risk Score. The At-Risk cutoff was set at 5. Within the FMS™, there are potentially 17 at-risk variables within their scoring system. Initially, 7 was set arbitrarily. After 2 years of data, trials, and over 2,000 FMS™ scores, this was adjusted to 5 based on feedback from the coaches that were working with the individuals. The Quadrant Table can be seen in the Appendix. Both versions of the scoring sheets indicate the Quadrant of the person scored at the completion of the FMS™. This way, all the needed data is on one sheet.



In table 2, there are three scores of 14-5, and just like table 1, each of these is different. So, there is a third scoring filter to apply to help stratify the data already collected during the FMS™:

<i>table 3</i>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
<b>Overhead Squat</b>	2	3	2	2	3	1
<b>Hurdle Step</b>	2/2	2/2	2/2	3/3	2/2	2/3
<b>In-Line Lunge</b>	2/2	2/2	2/3	3/3	1/1	2/3
<b>Shoulder Mobility</b>	2/2	1/1	2/2	3/3	3/3	2/2
<b>Active Straight Leg Raise</b>	2/2	2/2	2/2	1/1	3/3	3/3
<b>Trunk Stability Push-up</b>	2	2	2	1	0	1
<b>Rotary Stability</b>	2/2	2/2	2/2	1/1	1/2	3/3
<b>TOTAL SCORE</b>	<b>14-0-0</b>	<b>14-2-0</b>	<b>14-1-0</b>	<b>14-5-0</b>	<b>14-5-1</b>	<b>14-4-0</b>

The third score is the “Pain” score, and it reflects the number of tests that warranted a score of 0 due to pain. Currently, FMS Inc. recommends that anyone that experiences pain during the FMS™ should be referred for further evaluation. Adding the third scoring point immediately clarifies who needs this evaluation within the new total score. Anyone that receives a Pain Score greater than 0 requires further medical evaluation based on FMS Inc. recommendation. Example E needs further evaluation from a medical professional since they scored a 0 on the overhead squat.

At the onset of these examples, there were 6 identical FMS™ scores (14, 14, 14, 14, 14, 14). At this point, there was no way to know anything about these scores or determine which had more or less risk factors. After the “At-Risk” filter was applied, these 6 scores were stratified into 4 different scores:

- 14-0
- 14-1
- 14-2
- 14-4
- 14-5
- 14-5

At this point, these similar appearing scores of 14 differentiated themselves and a determination about each could be made. It the At-Risk score, allows each score to be seen in regards to more/less risk factors. It can easily be observed, without any need to further dive into each individual score, that 14-0 has fewer risk factors than 14-4. This is not predictive of injury or durability, just indicative known movement behavior risk factors.



After the “Pain” filter was applied, none of the examples shared the same score:

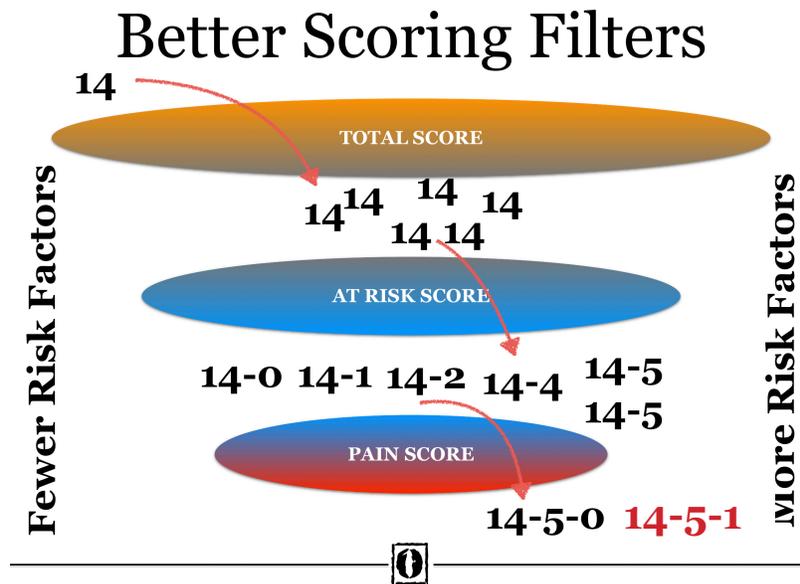
- 14-0-0
- 14-1-0
- 14-2-0
- 14-4-0
- 14-5-0
- 14-5-1

Once the Pain Score is included, a more complete picture about each individual score can be seen, with the one score of 14-5-2 being the lone score out of the examples that warrants further medical evaluation.

Based on the better scoring approach, quadrants can quickly be applied:

- **Quadrant 1** -Develop: none
- **Quadrant 2** -Correct: 14-0-0, 14-1-0, 14-2-0, 14-4-0
- **Quadrant 3** -Protect: 14-5-0, 14-5-2

Each person screened would need some level of adjustment to their training/practice plans, and all would benefit from a thorough corrective strategy. Most importantly, the end-user immediately can determine the one that warrants further evaluation due to pain. There is very little likelihood that even the most incompetent end-user would miss that.



In summation, this better scoring approach is a filtering process based on the data already collected during an FMS™ that allows faster, more consistent decisions to be made. The first score, is the FMS Inc. total score. The second, is the At Risk Score. The third, is the Pain Score. This more thorough scoring, in conjunction with the Quadrants, allows for much quicker decision making for the end-user and gives researchers more data points to evaluate to determine outcomes, injury risk, and truly evaluate the FMS™ tool.

A downloadable copy of this scoring sheet is available for download as an Excel file



## Better Hierarchy

“No one ever corrects the Overhead Squat now.” This was the answer that was given to the question of why is the Overhead Squat prioritized last in the corrective hierarchy. At its inception, the Overhead Squat was the first in the hierarchy, but today it is last. Once this change was made, there was rarely a need to fix the Overhead Squat anymore. That logic raises questions around the validity of the FMS Inc. corrective hierarchy. Is the lack of Overhead Squat correctives utilized a product of it just being last (and by that point everything else has been addressed) or is it because the Overhead Squat is the least important test to fix? When asked, that question was never directly answered.

This is the FMS Inc. hierarchy of corrective need:

1. Active Straight Leg Raise
2. Shoulder Mobility
3. Rotary Stability
4. Trunk Stability Push Up
5. In Line Lunge
6. Hurdle Step
7. Overhead Squat

At its roots, according to FMS Inc., this order is based off of the developmental sequence that all humans go through. Unfortunately, other than their statement of this, there is little to support this. A quick google search of ‘developmental sequence FMS’ results in this image, which is available at (<https://www.otpbbooks.com/neurodevelopmental-sequence-for-trainers/>):

### The Neurodevelopmental Sequence





On a superficial level, this is a great representation of the developmental milestones. However, at a deeper level it is incomplete in regards to the actual developmental sequence. Beginning in 2011, FMS Inc. began using this image as their visual representation of the developmental sequence:



In 2016, FMS Inc. updated their image, but maintained the same progression/order. Proceed to the 2:10 mark of this video (<https://www.youtube.com/watch?v=sPKraRlqJ-s>) to see the image they currently use as a visual reference of the developmental sequence they follow. The milestones that FMS Inc. include in their version are listed in the following order:

1. Supine
2. Prone
3. Rolling
4. Quadruped
5. Crawling
6. Sitting
7. Kneeling
8. Squatting
9. Vertical Stance
10. Gait

If this list of developmental milestones is overlaid onto the FMS™ corrective hierarchy, immediate conflicts present themselves. To see these, the FMS™ tests need to be described within the context of the developmental sequence (table 4).



<i>table 4</i>	<b>developmental sequence descriptor</b>
<b>Overhead Squat</b>	Squatting
<b>Hurdle Step</b>	Vertical Stance, Gait
<b>In-Line Lunge</b>	Vertical Stance, Gait
<b>Shoulder Mobility</b>	Vertical Stance
<b>Active Straight Leg Raise</b>	Supine
<b>Trunk Stability Push-up</b>	Prone
<b>Rotary Stability</b>	Crawling

When this list is reordered to follow the FMS Inc. corrective hierarchy it looks like this:

<i>table 5</i>	<b>developmental sequence descriptor</b>
<b>Active Straight Leg Raise</b>	Supine
<b>Shoulder Mobility</b>	Vertical Stance
<b>Rotary Stability</b>	Crawling
<b>Trunk Stability Push-up</b>	Prone
<b>In-Line Lunge</b>	Vertical Stance, Gait
<b>Hurdle Step</b>	Vertical Stance, Gait
<b>Overhead Squat</b>	Squatting

When the order of the right column in table 5 is compared to the order depicted on the visual image of the developmental sequence (that FMS Inc. includes in their teachings), it is clear that something is wrong. This column does not follow the recommended sequence. This presents a hierarchy that is not based on the developmental sequence.

Which leads to the question: *if movement develops via the developmental sequence, and this serves as the blueprint for the correctives, why is there a difference in corrective sequencing?* There are many justifications to explain this away, the most common being the “mobility before stability” pillar. This opens the door to how FMS Inc. determined that the Active Straight Leg Raise and the Shoulder Mobility tests are described as the “mobility” portion of the assessment. It could easily be argued that the Overhead Squat requires more systemic mobility than the active straight leg raise and shoulder mobility tests combined. Regardless of this, at the end of the day, there is a conflict between the FMS™ corrective hierarchy and the developmental sequence. When the order of the FMS™ tests is rearranged according to the sequencing laid out by



the developmental sequence that every pediatrician follows, the better hierarchy looks like this:

<i>table 6</i>		<b>Better Hierarchy of correctives</b>
<b>Supine</b>		Active Straight Leg Raise
<b>Prone</b>		Trunk Stability Push-up
<b>Crawling</b>		Rotary Stability
<b>Squatting</b>		Overhead Squat
<b>Vertical Stance</b>		Shoulder Mobility
<b>Vertical Stance, Gait</b>		In-Line Lunge
<b>Vertical Stance, Gait</b>		Hurdle Step

When the actual developmental sequence is applied to the FMST™ tests, the better hierarchy is quite a bit different. However, the reasoning behind this is straightforward - it is how humans develop movement behavior. There is no consideration about complexity, or mobility versus stability, or difficulty of the tests, or outcomes in a given environment. It is based on the language of the developmental sequence that FMS Inc. follows.

**At** the forefront, this reordering of the hierarchy might seem like a matter of semantics. However, a deeper understanding of movement behavior and development quickly dispels that. All infants **MUST** progress through the same developmental sequence; for healthy development, there is no other option. The first thing that newborn infants must do is un-flex. Newborns enter this world in a systemically flexed posture because they have been in the womb for the past 9-months, and things were tight. This un-flexing occurs in response to gravity; specifically, the influence of gravity on all of the newborn's systems during "tummy-time" (prone). Until this systemic extension is achieved, nothing beyond prone can occur in the developmental sequence. Specifically, because until adequate time has been spent in prone, the secondary curves of the newborn's spine are absent. Each developmental posture provides the foundation for the next posture, which means that if there is a problem, the sequence stops. *All the details of what develops at each stage are beyond the scope of this paper, but, things like this occur at each level of the sequence.*

Beyond the age of 24 months (once the sequence has progressed to standing), the toddler has more options. This means anyone older than 2 with a movement issue that needs to be corrected has options. This is why a random hierarchy can work. Kids and adults bring a robust compensation strategy to the table every day - it's called adaptation, and humans get better at it every day. The newborn has no option to get to Quadruped other than through developing their secondary spinal curves and the requisite strength to press back and up from the prone posture. When the newborn gets



into up into Quadruped, it will look perfect! Grandpa Gene, on the other hand, will get into a bastardized version of Quadruped by whatever means necessary - bent elbows, hips not at 90 degrees, protracted and winged scapula, and a giant kyphotic hump. All of those need to be fixed.

Contrary to dogma, the best place to fix those issues does not lie in Quadruped. When following the FMS™ hierarchy, it is a flip of the coin on how someone will look in Quadruped when addressing the Rotary Stability test. Nothing has been done prior to Quadruped to address the needed components of Quadruped. Within the FMS™ hierarchy, someone could have issues in prone (TSPU) that are unresolved when working in Quadruped. There is an 80% likelihood that an individual has a TSPU problem (based on data compiled from 5,000 screens performed on 10-35 year-olds of varying activity levels.) This leads to frustration by both the end-user and the patient/athlete/client. None of those issues Grandpa Gene had can be fixed *efficiently* in Quadruped. With enough time and energy, they can be addressed out of Quadruped, but why waste that time and energy when nature has presented a better path?

To show that it is not just semantics, consider this FMS™ score:

<i>example 1</i>	<b>Grandma Dee</b>
<b>Overhead Squat</b>	1
<b>Hurdle Step</b>	1/2
<b>In-Line Lunge</b>	2/2
<b>Shoulder Mobility</b>	2/2
<b>Active Straight Leg Raise</b>	2/2
<b>Trunk Stability Push-up</b>	1
<b>Rotary Stability</b>	1/2
<b>TOTAL FMS™ SCORE</b>	<b>10</b>
<b>TOTAL BS/H SCORE</b>	<b>10-6-0</b>

Based on example 1 above, Grandma Dee scored a 10 on the FMS™. What does that indicate immediately? Only that she fell below the “unofficial” recommended score of 14. The BS/H score of 10-6-0 shows clearly that Grandma Dee has 6 risk factors in her score, but no pain. Additionally, she is a Quadrant 3 individual that needs protecting. If the FMS™ hierarchy is followed, this is their order of importance for correctives.:

1. Rotary Stability
2. Trunk Stability Push-up
3. Hurdle Step
4. Overhead Squat



In developmental language, this results in a progression that goes Quadruped, Prone, Single-Leg Vertical Stance/Gait, Squatting. According to the laws of nature, this is out of order. Rearranging those into the correct natural order leads to this sequence: Prone, Quadruped, Squatting, Single-Leg Vertical Stance. Translating that language back into the FMS™ language reveals this corrective hierarchy:

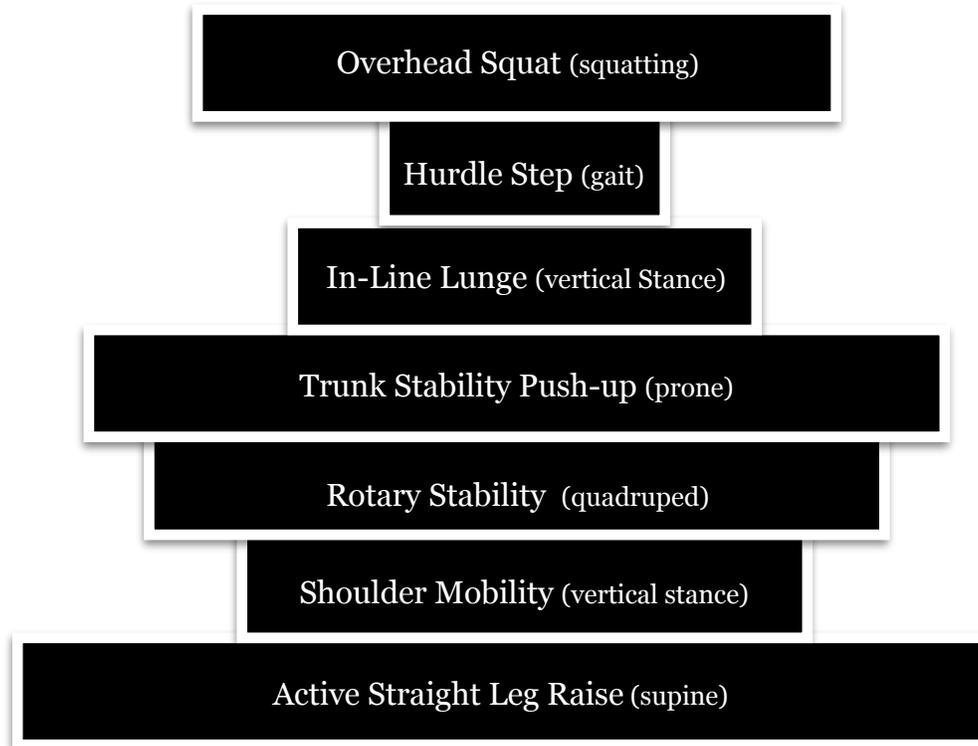
1. Trunk Stability Push-up
2. Rotary Stability
3. Overhead Squat
4. Hurdle Step

This is quite a bit different than what FMS Inc. recommends, but it follows a progression where each stage builds the foundation for the next stage. This concept is a foundation of FMS Inc. Performance Pyramid, where *“the pyramid is constructed of three rectangular blocks of diminishing size, with one rectangle building upon another.”* With the first block of their pyramid being classified as “Movement”, this block can be further broken down into the tests of the FMS™. When the better hierarchy is laid out in the FMS Inc. pyramid format, the better corrective hierarchy looks like this:





In the better hierarchy, each lower stage builds the foundation for the upcoming stage based upon the laws of nature and the blueprint the developmental sequence outlines. When the FMS™ hierarchy is considered from a developmental standpoint, and is laid out according to this pyramid concept, it looks something like this:



In this corrective hierarchy, just like a stack of blocks that toddlers will play with, this approach is likely to be very tenuous. The likelihood of it withstanding the world around it is significantly compromised compared to the hierarchy that follows nature blueprint.

There are other arbitrary reasons for the layout of the FMS™ hierarchy, one of which is that since the overhead squat is the most challenging test, it is considered last. But, that logic leads to the question of, “*most challenging based on what?*” The “most challenging” test will vary from person-to-person, based on their movement profile. For someone that can do the OHS as outlined for a score of 2, it is likely not a challenge. However, if that logic is followed based on the Central Nervous System, standing on one leg and stepping forward while maintaining an upright posture against gravity is actually the most challenging test on the FMS™. *Again, getting into the minutia of each of these stepwise progressions is beyond the scope of this paper.*

The final difference between the BS/H approach to the corrective hierarchy and the FMS Inc. approach is in the filtering of scores. While FMS Inc. directs end-users to target their corrective based on scores first (1’s, asymmetrical 1’s, then asymmetrical 2’s) the B/SH approach targets tests only. Anything that is not a 2 (or symmetrical 2/2)



or 3 (or symmetrical 3/3) is targeted based on the test, not the score. The thing that gets overlooked with movement assessments is that the individuals problem is not the tests they did poorly on. A person with a 1/1 ASLR issue does not have an active straight leg raise issue, they have an issue that shows up in that specific test. The individual problem is not the problem, it just exposes the fault of individuals movement behavior system. Since there is no way currently to determine which problem is worse (falling below minimum expectations or an asymmetry) each have to be weighted equally. If an individual has a 2/3 on the Rotary Stability test is that better or worse than a 1/1? All that can be definitively said is that there is a problem with the RS test - arguing the degree of “bad” is a waste of energy. Again, this is not just a matter of semantics, it leads to drastic changes in corrective strategies. Look at this example:

<i>example 2</i>	
<b>Overhead Squat</b>	1
<b>Hurdle Step</b>	2/3
<b>In-Line Lunge</b>	2/3
<b>Shoulder Mobility</b>	3/3
<b>Active Straight Leg Raise</b>	2/2
<b>Trunk Stability Push-up</b>	2
<b>Rotary Stability</b>	2/3
<b>TOTAL FMS™ SCORE</b>	<b>14</b>
<b>TOTAL BS/H SCORE</b>	<b>14-4-0</b>

In the FMS™ corrective hierarchy, the corrective order would be:

1. OHS
2. RS
3. ILL
4. HS

However, this person has a systemic problem that is originally exposed in quadruped which will be ignored while trying to fix a squatting problem first (because the OHS problem is considered more of a problem since a 1 is less than a 2). While that RS problem might be considered less of a problem, since higher order movements are built on what precedes them, how can we say the “worse” problem in the OHS is not just a magnification of the RS problem? Going from quadruped to standing is more complex to the CNS and there is a significantly smaller base of support in the OHS test than the RS test. Add onto that the increased requirements to resist gravity in a fully vertical system and the result is a situation where the systemic fault clearly seen in the OHS is likely the same subtle fault that the 2/3 RS correctly identified.

In the BS/H approach, the corrective order would be different since all scores that are not 2, 2/2, 3, or 3/3 are weighted equally. This new order would be:



1. RS
2. OHS
3. ILL
4. HS

Not a drastic change, but now it is perfectly aligned with how the CNS develops movement behavior and is positioning the sequence in a manner that is familiar to the CNS and builds on itself. When in doubt, falling back onto the movement principles that nature has hidden in plain sight gives the consistent answer and removes doubt.

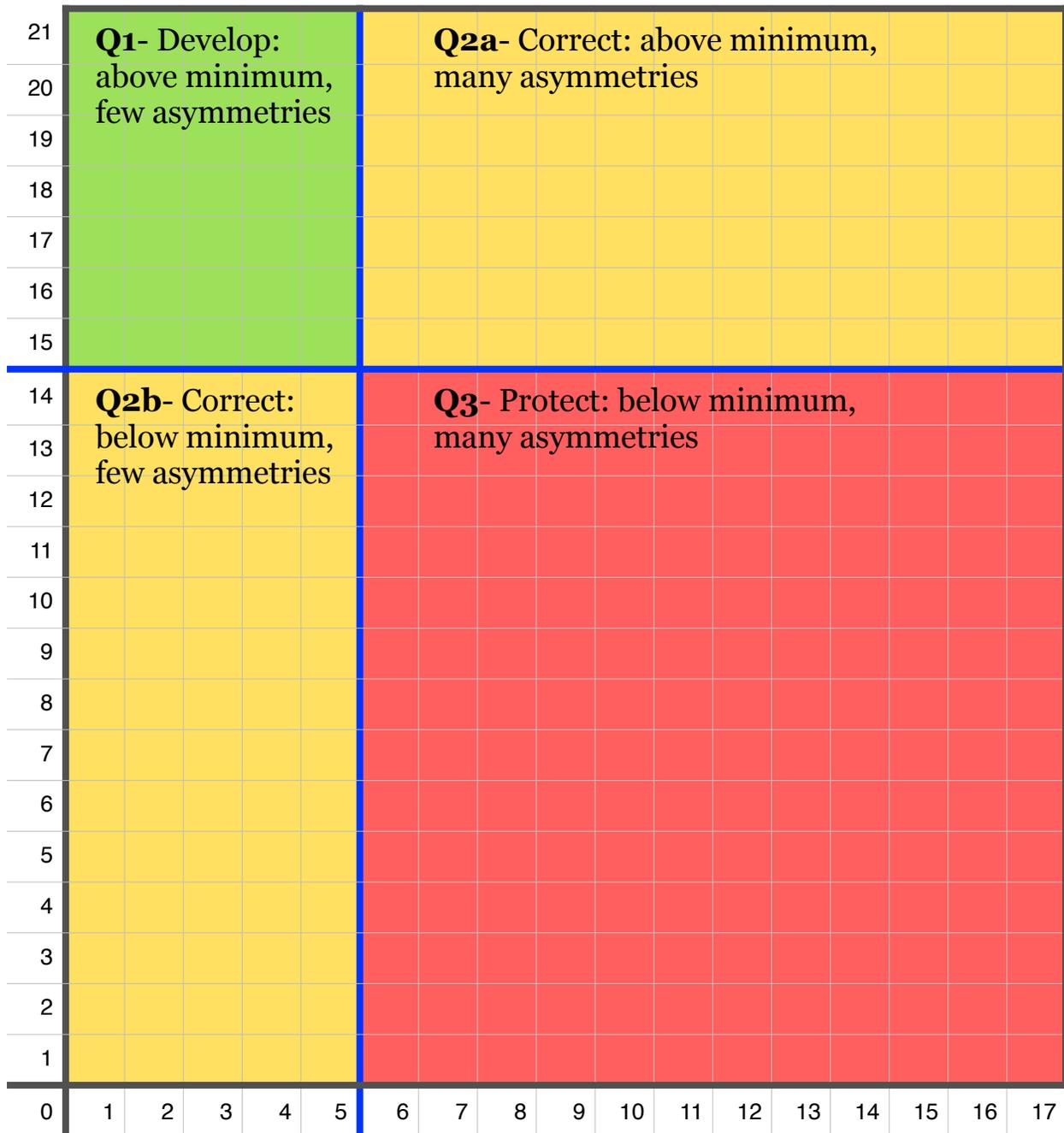
## **In Conclusion**

The FMS™ was a valuable tool in the progression of movement assessments. Continuing to use this tool AS DESCRIBED BY FMS Inc. will allow the end-user to get valuable information to apply to the person they are working with. If any portion of the FMS™ is changed, it is no longer the FMS™. The Better Scoring/Hierarchy (BS/H) is not attempting to change the way the FMS™ is administered or even scored. This approach allows the end-user to use the FMS™ *exactly* as prescribed and recommended by FMS Inc. The adjustments come on the backend to provide both the end-user and the researcher a more complete picture of what is going on and a more direct path to addressing the issues that were identified.

It is clear and evident that many people move better and perform better today because of the FMS™. Many coaches, trainers, and healthcare professionals have encountered high degrees of success by implementing the FMS™ into their day-to-day practices. The FMS™ works and gets results. Applying the BS/H approach will only add to the positive results, and often, it will allow those results to be seen sooner and more apparent. Additionally, for researchers, this allows all the data that has been collected to be reanalyzed.



## Appendix 1 - The Quadrants Visual Reference Guide:



Be Aware, the line AFTER the number represents the score, so the vertical blue line represents an “At-Risk” score of 5 and the the horizontal blue line represents an FMS score of 14. If a score falls directly on the line, this person falls into the more conservative quadrant.



## Appendix 2 - The team problem.

In 2013 at a Movement Restoration Workshop, the Director of Athletic Performance at UCLA asked the following question: *“How do I use the FMS with our teams? We are trying, but.....We screen our athletes. Then we run into issues when trying to apply the correctives to the teams. It becomes a burden on my coaches to go through all the scoring from each team. We have a lot of data, but.....”*

At the time, the answer I provided was the best I had - look for tendencies and group your athletes based on those tendencies. Then apply a similar corrective plan to those groups. For example, if 25 players on the football team all had issues with their active straight leg raise, give them the same corrective plan. If 30 had less than optimal scores on their shoulder mobility test, give them the same corrective plan. I also asked him to consider regrouping how he brought his teams in (instead of the typical football team working out by positions, try grouping them based on their FMS™ scores.) At the time, we thought it was a great plan. Now, I’m embarrassed and need to apologize.

However, his problem -analyzing a large group and then implementing change- is a real problem and it is not unique to him. It is one that has been spinning up in my head for a long time. I can’t say this will solve it, but I do feel like this will help to more easily and effectively create clusters. I do feel that being able to know which athletes on the team fall into Quadrant 1 (Develop), Quadrant 2 (Correct), and Quadrant 3 (Protect) is a step in the right direction. Immediately, worrying about adjusting anything in the Quadrant 1 athletes workout/training plan is taken off the “to do” list because they are ready to train; just don’t mess them up. Knowing who is a Quadrant 3 athlete opens the door to conversations with the Sports Medicine team; who needs further assessment/evaluation and what needs to be removed from their training. This allows the Strength and Conditioning coaches to focus on the Quadrant 2 athletes, the ones that can go either way. The right corrective and training plan will bump them up to Quadrant 1 athletes, or the wrong approach will move them into the realm of Quadrant 3.

For the quadrant 2 athletes, individual modifications can be made to the lifts they are doing in training. Consider example 3 of a football players FMS™ score:

<i>example 3</i>	<b>Linebacker 1</b>	
<b>Overhead Squat</b>	1	<b>FMS™ TOTAL SCORE</b>
<b>Hurdle Step</b>	2/3	
<b>In-Line Lunge</b>	2/3	<b>14</b>
<b>Shoulder Mobility</b>	2/2	
<b>Active Straight Leg Raise</b>	2/2	<b>BS/H TOTAL SCORE</b>
<b>Trunk Stability Push-up</b>	3	
<b>Rotary Stability</b>	2/3	<b>14-4-0</b>



Based on the FMS™ score of 14, it is almost “unofficially” good. The Overhead Squat would be targeted, followed by Rotary Stability, the In-Line Lunge, and the Hurdle Step. If you follow the Red/Yellow/Green Chart that Brett Jones put together for FMS Inc., all squatting variations, all single leg variations, all lunges, all split stance variations, and all asymmetrical exercises would be removed. As a strength coach, what is left? Clamshells?

If the perspective is tilted, things change drastically. For this Quadrant 2 athlete, modifications need to be made in their training, and their movement profile needs to be addressed. According to the BS/H approach, the order of priority would be Rotary Stability, Overhead Squat, In-Line Lunge and Hurdle Step. When this is considered developmentally, there appears to be a problem from Quadruped and up. Prone, Supine, and Symmetrical stance are good - any lift/exercise that falls into those are good to go. But, when the entire cluster is considered, there is an obvious issue with stance - we see problems in 3 of the 4 standing tests (OHS, HS, ILL). Unfortunately, the knuckle ball here is the OHS - we cannot determine if it is a squat problem or an overhead problem. We do have some conflicting information; the symmetrical vertical stance test (SM) is good. Therefore, symmetrical stance is not completely off the menu, just squatting. For this athlete, we can do all of the following lifts safely:

- Deadlift
- Clean
- Jerk
- Power Snatch
- Bench Press
- Overhead press
- Pull ups
- Kettlebell Swings
- Kettlebell Snatch
- Curls
- Rows
- Symmetrical jumping/explosive drills (that don't require full squatting)
- Any upper body lift in supine/prone/symmetrical standing.

So, now it is my turn to ask a question - *“With this list of things to do, can you put together a temporary adjusted program for a football player? Just until your corrective strategy targeting the RS is successful?”*

Even if this stops at classifying athletes by Quadrant, there is still an appreciation for which athletes need to be monitored more closely (Quadrants 1 and 2). I have no aspirations that this is the complete answer to the original question from 2013. But, I hope it is moving in a slightly better direction than the crappy answer I gave 6-years ago. For that, I apologize.



## Appendix 3: The Pain Score

Why does the pain score matter? Is a pain score of 1 better/worse than a pain score of 4? The answer is, it depends on your licensing and professional Scope of Practice.

If you are not a licensed healthcare provider, it is simple - anything greater than a pain score of 0 warrants a referral to a qualified healthcare professional for further evaluation.

If you are a licensed healthcare provider, it is a little more complex. Any pain score >0 warrants further evaluation/examination to determine the cause/source of the pain. But a higher pain score indicates that the pain is having a greater impact on the individual's movement behavior; it is indicative of the severity of how pain is affecting the individual's life. What this translates to is that this pain score can be an objective "marker"/data point to the chosen intervention path. If, on day 1, an individual scores a 14-5-4 and on day 21 the individual scores 14-5-1, then the chosen intervention path for the source of the pain is working. If, after 14 days of therapy, the score is still a 14-5-4, then the selected clinical interventions are NOT carrying over from the table.

The modus operandi for orthopedic rehabilitation is to treat the pain and the diagnosis. A patient's knee hurts, so the knee is treated. Overall, we are moderately successful at addressing pain (however, the opioid pain crisis we are in the midst of raises questions to this point). What we have ultimately failed at as a collection of professions (Physical Therapy, Occupational Therapy, Athletic Training) is addressing how that pain alters the individual's behavior. We can generally make the knee pain go away on the table, but it often returns as soon as the patient returns to life. At that point, they deal with it until the next "pain" shows up, often with OTC pain meds or home remedies to mask the warning signal from the CNS. What we are left with is a patient with cervical neuropathy and no structural causative factors that has gotten worse in "neck" focused skilled therapy. A deeper dive into this patient's story reveals a total knee replacement that had questionable therapy. The patient was discharged from therapy scared to use their knee and lacking significant knee flexion and hip extension. The cascade of movement behavior adaptations that followed was both expected and predicted. 8-years later, they are a surgical candidate because no one could explain the numbness/tingling and wrote it off as a "pinched nerve" due to arthritic changes.

Fast forward 9 therapy visits that addressed this individual (their movement behavior, their orthopedic history, their behavioral health well being, their emotional well being) and not just her arm tingling/pain and she is both 100% pain and symptom free. The keystone to this case - finishing the incomplete therapy for her total knee 8-years ago.

The point to all of this - the pain score is the link between pain interventions and movement behavior; is the strategy of pain management actually affecting the individual's real-world life.