1. Function starts to scratch it’s head when it is looking for the value of on-ground training for those who function primarily upright.

2. Rarely do we hold or statically plank . . . we are task oriented and therefore desire to move.

3. On The Ground, as well as in upright function, we use ground reaction force, gravity, momentum, other muscle forces, purpose, our hands and feet, all as drivers to produce the motion we desire.

4. We train to be efficient and effective.

5. To tweak something out . . . revisit the ground.

6. The analysis is the rehab, is the training.

7. With movement in all three planes, the light bulb goes off.

8. A **Chain Reaction™** occurring with functional movement on the ground.

9. There is a need to recapture On The Ground **Chain Reactions™**.

10. Our first year of life is dedicated to on-ground function.

11. We use the tool based on the application of functional strategies to create the desired **Chain Reaction™** . . . don’t let the tool use you.
# ON-GROUND FUNCTION

The Evolution of Movement

By: Gary Gray, PT

## OBJECTIVES FOR THE ON-GROUND FUNCTION GUIDES

To assimilate up-to-date information and knowledge about On-Ground Function. To learn how to apply effective functional techniques when testing, training, and rehabilitating using On-Ground Function.

To understand and appreciate the tri-plane Chain Reaction™ principles as they apply to On-Ground Function.

## HOW TO USE THIS FUNCTIONAL GUIDE

This functional guide can be used as a convenient summary of the program’s contents to take with you after viewing. You can also use this guide as a notebook; space has been provided so that you can make notes on relevant tracts as you watch them.

## TAPE CONTENTS

<table>
<thead>
<tr>
<th>TAPE CONTENTS</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contents / Objectives</td>
<td>1</td>
</tr>
<tr>
<td>Functional Strategies</td>
<td>2</td>
</tr>
<tr>
<td>Functional Understanding</td>
<td>4</td>
</tr>
<tr>
<td>Functional Analysis</td>
<td>6</td>
</tr>
<tr>
<td>Functional Rehabilitation</td>
<td>8</td>
</tr>
<tr>
<td>Functional Training</td>
<td>10</td>
</tr>
<tr>
<td>Functional Transformation</td>
<td>12</td>
</tr>
<tr>
<td>Functional Fun</td>
<td>14</td>
</tr>
<tr>
<td>Key Messages / Information</td>
<td>16</td>
</tr>
</tbody>
</table>
Special thanks to Charlene Larson (head angel) and all of her other angels, along with a special thanks to my on ground friends.

**STRATEGY 1**
Strategically understanding normal milestones of motor development.

**STRATEGY 2**
Strategically appreciating how function is developed through motion.

**STRATEGY 3**
Strategically facilitating complex forms of function from basic forms of function.

**STRATEGY 4**
Strategically analyzing On-Ground Function to integrate with all forms of function.
STRATEGY 5
Strategically tweaking On-Ground Function to facilitate the desired Chain Reaction™.

STRATEGY 6
Strategically transforming On-Ground Function into upright function.

STRATEGY 7
Strategically developing various forms of three dimensional On-Ground Functional matrixes.

STRATEGY 8
Strategically realizing the pros and cons of On-Ground rehabilitation and training.
Rejoicing in the life of Zeb

Understanding the miracle of birth, the grace gift of children

The milestones of function

A baby is tied to reflexive, involuntary movements. As reflexes integrate, the child’s motor activities are based on physical actions to seek a pleasurable response.

**Story of Brad and the nipple**

Progressing to acting upon a specific desire and goal


Maneuvering in all three planes of motion on the ground

The ability to get up off the ground

Where function starts to scratch it’s head is when it is looking for the value of on-ground training for those who function primarily upright

**Normal milestones of motor development**

- prone head lifting 1-2 months
- good head control 4 months
- prone on elbows 4 months
- prone on extended arms 6 months
- rolling side lying 1-2 months
- rolling side lying to prone 4-5 months
- rolling prone to supine 4-5 months
- rolling supine to prone 6-8 months

Rarely do we hold or statically plank . . . we are task oriented and therefore desire to move.

Guarded upright gait transforms into a smooth reciprocal gait at approximately 18 months

Understanding neurophysiological and neuromusculoskeletal progressions

Our goal is to get somewhere and to get something
Prone crawling-belly on the ground

Prone creeping-belly is off the ground . . . this happens at approximately 8-9 months

Independent sitting occurs around 8 months

Observing sitting with rhythmic motion, hands and knees with rhythmic motion, standing with rhythmic motion

General motor development occurs head to foot, arms reaching before legs crawling, mid-line to peripheral

With upright function, the sequence of the motor development Chain Reaction™ changes

“We develop by moving, not by statically splinting or planking”

We develop by constantly loading and then exploding . . . eccentric reaction followed by concentric production of force

On The Ground, as well as in upright function, we use ground reaction force, gravity, momentum, other muscle forces, purpose, our hands and feet, all as drivers to produce the motion we desire

From various ground positions, utilizing all of the normal physiological drivers to create the desired Chain Reaction™

Understanding and appreciating all the significant differences in the neuromusculoskeletal reactions

Key Question . . . Will On-Ground Rehabilitation and Training Help Me In Upright Function?

How to determine, through functional testing, the answer to “the key question”.

Stability with On The Ground function and upright function is movement, not the lack of movement.

Appreciating the miracle of movement and taking advantage of that understanding to take better care of our patients and clients
Introduction of Jeremy Levine, Director of Functional Training, Military and Governmental Services Division, Summit Life Systems

How we both look at function . . . opening my eyes

Huge need in the military for a logical functional training program derived from an understanding of their global functional demands

Training within their own environment . . . what are the physical demands?

Training to be efficient and effective

Getting three dimensional function into all forms of functional movement

Going back to the initial continuum of functional motor development

Wiring and sequencing in the body's neuromusculoskeletal system the neurological circuit

Prone on belly “floundering”

To tweak something out . . . revisit the ground

Prone on belly . . . lying in the frontal plane

The analysis, is the rehab, is the training

• Prone on belly - hands at side, utilizing the head as a driver in the sagittal, frontal and transverse planes
• Prone on belly - utilizing the feet as drivers in all three planes
• Prone on belly - utilizing the pelvis as a driver in all three planes
• Prone on belly with hands under chin - utilizing the head and the arms as drivers in all three planes
• Prone on elbows - utilizing foot drivers in all three planes
• Prone on elbows - utilizing hand drivers in all three planes
• Prone on elbows - with concurrent foot and hand drivers in all three planes
• Prone on extended arms - utilizing the pelvis as a driver in all three planes
With movement in all three planes, the light bulb goes off

Turning the little piece of pie into a smorgasbord when we realize and understand:
- drivers           - planes of motion
- gravity           - loading and exploding
- eccentric before concentric - complexity of motion
- the goal of function
- the Chain Reaction™ of the neuromusculoskeletal system

• On elbows and knees with pelvis, hands, and foot drivers in all three planes of motion
• On elbows and feet with pelvis, hands, foot, knees, and head drivers in all three planes of motion

I get excited because I see a Chain Reaction™ occurring with functional movement on the ground

Discussion of crawling and creeping from all prone positions in all three planes of motion

The fun part is empowering people
• Prone hands and feet with pelvis, chest, hands, head, knees, and foot drivers in all three planes
• Super tweaking a push-up

Developing the On The Ground functional matrix

Tweaking the hand positions in all three planes

Most of functional movement is “whopper jawed” . . . it is asymmetrical

Discussion of prone positions, side lying positions, supine positions, and kneeling positions

Differentiation between foundational and enhancement exercises

Documenting our three dimensional functional environment

The 3D Kneeling Lunge Matrix

Jeremy has made my world bigger and richer

The analysis becomes the rehab, becomes the training and conditioning

Understanding the developmental sequence of normalized movement

**The need to recapture On The Ground Chain Reactions™**

Proprioception is what it’s all about . . . it is the common denominator of function . . . let’s always pursue function
Debrief with Bob Wiersma, Executive Director, Functional Rehabilitation Network

- When the foot hits the ground . . . when the hands and knees hit the ground
- Understanding the gap and the curve ball
- Understanding and taking advantage of the normal developmental sequence
- Our first year of life is dedicated to on-ground function
- Being horizontal versus vertical, relative to gravity
- Function is driven by proprioceptors . . . maintaining proprioceptive integrity
- Giving the wisdom of the body more credit
- Going back to the On The Ground functional thought process
- Going from “no” or “I don’t know” to “I think so . . . my fault”
- We go through neutral . . . we don’t stay in neutral
- Balance is motion, not splinting, planking, co-contracting, or static posture
- Coming back to the initial dynamic components of the functional continuum
- Intervention with On The Ground analysis, rehabilitation and training
- Enjoying being “pushed back” and “set back”
- Looping back in order to loop forward
- A big force tweak from changing positions relative to the force of gravity
- Tying the whole spectrum of function together
- The bottom line is we just want to love each other and help each other out
- Forceful humility is a good thing

Special thanks to Bob Wiersma
Gary’s opportunity to train and condition with Jeremy Levine

- Side lying elbow and foot, with pelvis driver, foot drivers, and hand drivers in all three planes
- Side lying elbow and foot, with foot and hand opposite rotational reaches
- Side lying elbow and foot, with foot and hand same side rotational reaches
- Supine shoulders and feet, with pelvic drivers in all three planes
- Supine shoulder and feet, with foot drivers in all three planes
- Supine shoulder and feet, with hand drivers in all three planes
- Supine shoulder and feet, with concurrent foot and hand drivers in all three planes
- 3D Kneeling Lunge Matrix
  - Anterior lunges
  - Same side lateral lunges
  - Same side rotational lunges
- 3D Kneeling Lunge Matrix Up and Go
- 3D Kneeling Lunge with Reach Matrix
- Handle enhanced 3D On Ground Exercises
- Akrowheels enhanced 3D On Ground Exercises
- Dumbbell enhanced 3D On Ground Exercises
• Rubberband enhanced 3D On Ground Exercises
• Bodyblade enhanced 3D On Ground Exercises
• Medicine Ball enhanced 3D On Ground Exercises
• Ab Dolly enhanced 3D On Ground Exercises
• BAPS enhanced 3D On Ground Exercises
• Cuff Link enhanced 3D On Ground Exercises
• BOSU enhanced 3D On Ground Exercises
• Physio Ball enhanced 3D On Ground Exercises
• Step enhanced 3D On Ground Exercises

It really just becomes a party

Using the tool based on the application of functional strategies to create the desired Chain Reaction™ . . . don’t let the tool use you.

A joy to have a friend that asks why.

Special thanks to Jeremy Levine
Getting close to the ground during golf . . . attempting to visualize the putt.

Can On The Ground training make me better at golf . . . or make me better at any activity or game that is performed upright?

The first thought process is to determine what the pelvis and trunk are doing relative to each other in all three planes of motion, during the function that we desire to enhance.

The second thought process is to determine the points of transformation

- Prone frontal plane mobilizations
- Prone transverse plane hand drivers
- Prone transverse plane bilateral hand and trunk drivers
- Prone hand, knee, and foot, with transverse plane hand drivers
- Prone hand and knee, with transverse plane hand and foot drivers
- Prone hands and feet, with transverse plane hand drivers
In golf . . . the ball doesn’t tell a lie

- Side lying on arm, with transverse plane hand and foot drivers
- Side lying on elbow, with transverse plane hand and foot drivers

These are not instead of . . . they are in addition to.

Description of the function of the hamstrings in golf

Supine on shoulders, with heels on table, with transverse plane bilateral hand drivers

Is it possible that various On The Ground positions with appropriate exercises can provide a tweak to help me with my upright function?

Golf humbles me, function humbles me . . . that is the way I want to die . . . I want to die humble
RESEARCH ROUNDTABLE WITH DR. DAVID TIBERIO


• On-ground, or dry land training for swimming - the position of the body relative to gravity in the water and on the ground

• The first biomechanical analysis technique with any form of function is to determine what the pelvis is doing in all three planes of motion relative to the shoulders in all three planes of motion, and what are the functional points of transformation?

• At the same time determine what drives what

• With on-ground training for swimming, what are our stability tweak considerations?
  - changing the type, position, and the amount of stability

• Consideration of various load tweaks

• Consideration of same side breathing with swimming
• Getting symmetry in the transverse plane

• Utilizing the head as an effective transverse plane driver

• Discussion of time, speed, and pacing tweaks

• When the confusion creeps in, simply ask “so what do you think, proprioceptors?”

• Going somewhere else other than at the pure function could be good . . . or could be bad

• Function simply proves function

• We need to fully understand functional biomechanics and our strategic tweaks

• A good enough functional test will allow us to know if we are heading in the right direction

A special thanks to Dr. Dave Tiberio