1. Sitting is a challenge . . . we need to know the **Chain Reaction™** biomechanics of the function of sitting

2. In sitting, we are tweaking something out, shutting something down, “eliminating some biomechanical friends” . . . we are in a position of disadvantage

3. Without motion you can not have stability . . . chairs provide external stability that inhibit our ability to load and therefore create mostability

4. BioErgonomics is training an individual to prepare for the activity

5. The concept of positioning around neutral and movement through neutral

6. The complaint is pain, yet the issue is performance

7. Understanding the commonalities in all forms of function, yet appreciating and taking advantage of the unique features of the function of sitting

8. The analysis of the ability to expand, unwind and unload

9. Analyzing and giving the gift of pelvic motion and thoracic motion in all three planes of motion . . . and the ability to use it subconsciously while sitting

10. Sitting is balance . . . everything is balance in the transformational zone

11. The chair is just a **Chain Reaction™** butt reactor

12. The more we know and the better strategies we have, the more gifts we can give out

13. Our training and conditioning needs to make sense biomechanically and needs to feed that which we want to feed and really needs to be fun

14. Good research will always prove the truth

15. Ask the body functional questions and it will give us the functional answers
OBJECTIVES FOR THE SITTING FUNCTIONAL GUIDE

To assimilate up-to-date information and knowledge about Sitting.

To learn how to apply effective functional techniques when testing, training, and rehabilitating using a Sitting approach.

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

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.
G2 sharing while doing a wheelchair wheelie

G2 in his Bio-Sports hat, a gift from Michael Hansen, PT . . . Michael is the “tigger of tweak”. He has the gift of turning anything into fun.

STRATEGY 1
Strategically understanding the Chain Reaction™ biomechanics of sitting

STRATEGY 2
Strategically taking advantage of the BioErgonomics of sitting

STRATEGY 3
Strategically assessing the core’s ability while sitting as well as standing

STRATEGY 4
Strategically tweaking in and tweaking out to analyze, rehab, and train and condition for sitting

STRATEGY 5
Strategically developing powerful preventative programs for sitting
STRATEGY 6
Strategically treating the cause, compensation, and symptoms of sitting dysfunction

STRATEGY 7
Strategically revealing the truth in order to develop effective strategies for sitting

STRATEGY 8
Strategically designing a training and conditioning program based on the biomechanics of sitting

STRATEGY 9
Strategically transforming our understanding of sitting and the golf swing into a proprioceptively consistent training drill

STRATEGY 10
Strategically confirming our functional understanding of sitting through effective research
3D Sitting Triangle of Dave, Bob and Gary

- Ergonomic focus on sitting . . . focuses on the engineering of the workstation and the chair . . . we still are not solving the problem
- Concept of BioErgonomics . . . Chain Reaction™ biomechanics
- Sitting is a challenge . . . we need to know the Chain Reaction™ biomechanics of the function of sitting
- “Sitting isn’t sitting”
  - Static sitting - Dynamic sitting - Conversational sitting - Leisure sitting
- In sitting, we are tweaking something out, shutting something down, “eliminating some biomechanical friends” . . . we are in a position of disadvantage
- Sitting is different yet the same . . . looking at gravity and the points of reaction as well as gaining an understanding of the hips.
- The challenge for the sitting athlete is to still take advantage of the hips through the Chain Reaction™
- With sitting we take the hips, knees, and feet out of the picture . . . we take the powerful transverse plane loading as well as the frontal plane loading out of the picture . . . gravity and ground reaction or “butt reaction force” is there with a force through the ischial tuberosities.
- Strategically, how do we analyze, treat, train and condition and create preventative programs for the function of sitting?
- Two bookends of sitting . . . too much stability and not enough stability . . . what is the three dimensional balance (the goldilocks concept)?
- Without motion you can not have stability . . . chairs provide external stability that inhibit our ability to load and therefore create mostability
- Drivers of sitting include gravity, ground reaction force, our eyes, our hands and our feet
- Our feet assume 25% of our total body weight, while the ischial tuberosities assume 50%, with the rest of the butt and thighs assuming 25%
- The ischial tuberosities are only 8% of the entire buttocks region, handling 50% of the force
• BioErgonomics is training an individual to prepare for the activity
• BioErgonomics strategies include:
  1. Unloading  
  2. Unwinding  
  3. Increasing the envelope
• Bottom up opportunities through the butt by changing the position of the feet and the legs
• Strategy for analysis: does the individual have the ability to unload, unwind (move opposite), and increase the envelope (go further into what is required)?
• Sitting should be “going through our mid-ranges”
• Coming up with individualized strategies for restoration and rehabilitation, training and conditioning, and performance and prevention
• Are we in the functional end range with our sitting activity?
• The concept of positioning around neutral and movement through neutral
• Consider the seat as a “butt orthotic”
• We want to comfortably “sit through neutral”
• The causative cure of sitting . . . transforming the cause of sitting into the cure by treating the cause, the compensation, as well as the symptoms
• Understanding the thoracic spine, peltrunkula, and core, in sitting
• Symptoms from sitting caused by non-sitting activities
• Strategy of core training while standing as well as sitting
• A strategy of tweaking in as much as possible and then logically and sequentially tweaking out (including going through various sitting positional tweaks)
• Developing powerful strategies of prevention
• Getting to an out of the box, out of the chair thought process . . . “no ifs, ands, or butts about it”
• The proof is in the pudding
• The complaint is pain, yet the issue is performance
• Understanding the transverse and frontal planes with respect to the sagittal plane of sitting
Understanding the commonalities in all forms of function, yet appreciating and taking advantage of the unique features of the function of sitting

The principles and concepts in all of function are the same

The strategies are driven by the truth of function and of our biomechanical understanding of sitting

Starting our analysis for the function of sitting while standing up

**Standing Analysis**
- Gait and posture
- Tweaking the gait
- Balance reaction tests
- Excursion tests
- Points of Transformation of the major forms of function
- Biomechanical examination
- Specific hip and thoracic spine tests
- Foot and hand drivers

**Sitting with Feet Stabilized, Alternate Shoulder to Overhead Hand Drivers**
- Alternate hand, shoulder to overhead anterior reaches
- Alternate hand, shoulder to overhead posterior reaches
- Alternate hand, shoulder to overhead same side lateral reaches
- Alternate hand, shoulder to overhead opposite side lateral reaches
- Alternate hand, shoulder to overhead opposite side rotational reaches
- Alternate hand, shoulder to overhead same side rotational reaches

Where is their threshold of success throughout the entire Chain Reaction™?

**Sitting with Feet Stabilized, Analysis of Thoracic Spine Type I and Type II Motion**
- Right hand, overhead left lateral reach with left hand shoulder right rotational and left rotational reaches
- Left hand, overhead right lateral reach with right hand shoulder left rotational and right rotational reaches

Strategy of pre-positioning the rotational reach while driving in the frontal plane

Tweaking towards greater success during analysis to immediately gain a better appreciation of their functional successful threshold
Sitting with Feet Stabilized Pelvic Excursion Analysis
- Anterior/posterior pelvis excursion
- Right lateral/left lateral pelvis excursion
- Right rotational/left rotational pelvis excursion

Understanding “scootsie” in the transverse plane

With hand drivers sitting function reveals the trunk and pelvis going in the same direction in the transverse plane

Sitting with Feet Not Stabilized, Alternate Shoulder Overhead Hand Reaches Analysis
- Alternate hand, shoulder to overhead anterior reaches
- Alternate hand, shoulder to overhead posterior reaches
- Alternate hand, shoulder to overhead same side lateral reaches
- Alternate hand, shoulder to overhead opposite side lateral reaches
- Alternate hand, shoulder to overhead opposite side rotational reaches
- Alternate hand, shoulder to overhead same side rotational reaches

Analysis of the Core and Peltrunkula Reaction

Sitting with Feet Not Stabilized, Bilateral Overhead Hand Drivers Analysis
- Bilateral hand overhead sagittal plane drivers in limited range
- Bilateral hand overhead frontal plane drivers in limited range
- Bilateral hand overhead transverse plane drivers in limited range

Correlating functional success with symptoms

DISC Chair Analysis
Contact Functional Design Systems at 517-266-4653 or visit www.functionaldesign.com for more information on the DISC Chair

Creating a pelvis driven environment in all three planes to obtain additional functional information

Sitting with Feet Stabilized with Foot Positional Tweaks
- Sagittal plane - right stance, left stance
- Frontal plane - wide, narrow
- Transverse plane - toed in, toed out

Discussion of a cervical cause, thoracic compensation with a lumbar symptom
Eye Driven Sitting with Feet Stabilized Analysis
- Look right, bilateral hands at shoulder right rotational reach
- Look right, bilateral hands at shoulder left rotational reach
- Look left, bilateral hands at shoulder left rotational reach
- Look left, bilateral hands at shoulder right rotational reach

Strategy of revealing a cause sitting, yet initiating rehab standing . . . feeding in before feeding out.

Sitting with Feet Stabilized, Hands-on Scapular Reaction FMR Analysis
- Shoulder horizontal adduction
- Shoulder flexion
- Shoulder adduction
- Shoulder extension
- Shoulder abduction
- Shoulder horizontal abduction

The need to do it both ways . . . sitting and standing

The analysis of the ability to expand, unwind and unload

The question; “pelvis and thoracic spine . . . what do you got?”

TrueStretch™ Analysis

Unloading - creating distraction
Bilateral at overhead reach and hold with vertical distraction
  • Anterior/posterior pelvis drive
  • Left lateral/right lateral pelvis drive
  • Left rotational/right rotational pelvis drive

Bilateral at hip reach with hold with vertical distraction
  • Anterior/posterior pelvis drive
  • Left lateral/right lateral pelvis drive
  • Left rotational/right rotational pelvis drive

Expanding - going deeper into the functional envelope
Hips and knees flexed greater than 90 degrees with bilateral anterior at shoulder reach and hold
  • Anterior/posterior pelvis drive
  • Left lateral/right lateral pelvis drive
  • Left rotational/right rotational pelvis drive
Unwinding - going opposite of the function of sitting
Left foot left lateral at hip height reach with left hip externally rotated and stabilized with bilateral hand at head anterior reach and hold
- Anterior/posterior pelvis drive
- Left lateral/right lateral pelvis drive
- Left rotational/right rotational pelvis drive

Analyzing and giving the gift of pelvic motion and thoracic motion in all three planes of motion . . . and the ability to use it subconsciously while sitting

Analyze, treat, analyze and assess, treat, analyze and assess, treat . . . .

“The best party is the unplanned party” . . . always feed off our patients and clients and use the wisdom of their body to guide us.

Debrief . . . 3D Sitting Triangle with Bob, Dave and Gary
- Sitting posture versus posturing . . . the dynamic drives the static
- Analysis of resting posture . . . the sitting static attractor well
- Sitting is balance . . . everything is balance in the transformational zone
- Tweaking the eyes closed in our sitting analysis
- The strategy of transformation while sitting
- Sitting is microplyometrics
- Understanding the transformational zone in analysis, rehab and training and conditioning
- Giving stability to get mobility, or giving mobility to get stability
- Emphasis of loading and exploding
- The symptoms of neck and low back pain . . . looking at the thoracic spine
- The thoracic spine feels embarrassed . . . “letting his buddies down”
- Strategies of treatment
- Treating the cause, compensation, as well as the symptoms concurrently
- Giving the right gift to get the right reaction
- Analysis of the effectiveness of a foot orthotic correlated to the analysis of the effectiveness of a butt orthotic (chair)
- The chair is just a Chain Reaction™ butt reactor
- Our analysis has to be objective, quantifiable and performance based
- External tweaks on chairs . . . to get improved function and decreased pain
- We have to out think the potential destructive environment of sitting
- Emphasizing BioErgonomics
- The more we know and the better strategies we have, the more gifts we can give out

A special thanks to Dave and Bob
Gary’s opportunity to train and condition with Dave

**The 3D Bar Stool Matrix**
Taking advantage of our matrix concept, of the biomechanics of sitting, of our understanding of transformation zones, and of position and load tweaks

**Sitting on Bar Stool with Feet on Bar Stool Foot Rung**
Load with 10 lb dumbbells bilaterally

- Alternate hands, shoulder to overhead anterior reaches
- Alternate hands, shoulder to overhead same side lateral reaches
- Alternate hands, shoulder to overhead opposite side rotational reaches
- Alternate hands, shoulder to overhead posterior reaches
- Alternate hands, shoulder to overhead opposite side lateral reaches
- Alternate hands, shoulder to overhead same side rotational reaches

- Alternate hands, knee to shoulder anterior reaches
- Alternate hands, knee to shoulder same side lateral reaches
- Alternate hands, knee to shoulder opposite rotational reaches
- Alternate hands, knee to shoulder posterior reaches
- Alternate hands, knee to shoulder opposite lateral reaches
- Alternate hands, knee to shoulder same side rotational reaches

**Standing, Right Foot Anterior on Bar Stool**
Load with 10 lb dumbbells bilaterally

- Alternate hands, shoulder to overhead anterior reaches
- Alternate hands, shoulder to overhead same side lateral reaches
- Alternate hands, shoulder to overhead opposite side rotational reaches
- Alternate hands, shoulder to overhead posterior reaches
- Alternate hands, shoulder to overhead opposite side lateral reaches
- Alternate hands, shoulder to overhead same side rotational reaches
Sitting on Bar Stool with Feet on Bar Stool Foot Rung
Load with 10 lb dumbbells bilaterally
• Left hand, overhead opposite side lateral reach with right hand at shoulder right rotational to left rotational reaches
• Right hand, overhead opposite side lateral reach with left hand at shoulder left rotational to right rotational reaches

Sitting on Bar Stool with Feet on Bar Stool Foot Rung
Load with J.C. Quad Band (Bungee)
Partner front to front
• Bilateral hands, anterior shoulder to shoulder
• Alternate hands, anterior shoulder to same side at shoulder rotational reach
• Bilateral hands, anterior shoulder to overhead posterior reach

Discussion of partner side to side and partner back to back positioning, exercises and nomenclature

Covering all the transformational zones and mobilizing the hips and the thoracic spine

Our training and conditioning needs to make sense biomechanically and needs to feed that which we want to feed and really needs to be fun

A special thanks to Dave
Dave hanging from a tree, suspended by a harness on his butt, golf club in hand, on a beautiful golf course in Michigan

Transformational Drills . . . trying not to “out tweak” ourselves

Description of the tree, rope, and harness set-up

Camel backpack turned into a “camel butt pack”

Inhibit to facilitate . . . tweak out to tweak in

Facilitating an athletic set-up

Inhibiting the frontal plane slide in order to facilitate the transverse plane motion (staying in the tube)

Set-up with the harness, tweaking fore and aft, and side to side

With the backswing staying in the power position

Biomechanical/kinesthetic feedback . . . the butt angle creates the leg angle which creates the spine angle
Facilitating an improved tempo
Creating an improved and balanced follow-through
Facilitating an improved fore/aft posture
A transformational drill can serve as a diagnostic tool as well
Providing a “kinesthetic videotape” feedback
Trusting the harness . . . a unique stimulus
Looking more athletic, more grounded

With transformational drills the proof is in the pudding (the flight of the ball) . . .
Dave improves significantly

A special thanks to Dave
RESEARCH ROUNDTABLE AND DEBRIEF WITH DR. DAVID TIBERIO


The research of sitting supports all of our functional concepts

A study with a single arm anterior reach, at arm’s length, less than arm’s length, and 40% further than arm’s length

At 40% further there is the creation of a tremendous total body Chain Reaction™

With the greater reach the pressure under the feet went from 25% to 50% of body weight

What Chain Reaction™ really happened throughout the entire body with the further reach?

EMG analysis of the eccentric deceleration muscle activity in the transformational zone throughout the locomotor system

The tweak of thigh support and of reaching same side as well as opposite side rotational reaches as the variables in the study
Driving the center of gravity over the hip and over the leg on the same side as the reach

Good research will always prove the truth

Using sitting in order to facilitate what we do standing now that we are beginning to understand what occurs while sitting

Good research forces us to challenge our thought process

Good research confirms what we have observed

Transforming the research into improved abilities of taking care of others

The power of doing research on functional tasks. . . will give us functional information

The strategies we use are consistent throughout all of function

Ask the body functional questions and it will give us the functional answers

Our strategies need to be driven from the truth and therefore all of our exercises, techniques, and activities will also be driven from the truth as they emanate from our functional strategies

The truth has truly set us free . . . it has truly allowed us to enhance someone else’s life