Raising Great Children with Great Brain Function

Presented by:
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Great Children with Great Brains

Your speaker:
Dr. Michael Schmolke – Chiropractor, nutritional expert, father, coach, speaker, competitive athlete, patient wellness advocate.

We change lives through inspiration, empowerment, and excellent health care delivery.

Part I

- Discuss evidence supporting the explanation of causes and contributing factors of many young brain disorders; and review the development, behavior, integration, and functional challenges of the early life brain.

Brain challenges

- Recent developmental challenges; Smaller brain sizes demonstrated on childhood MRI's.
- Newborn-infant-toddler challenges; FASD; Autism, decreased co-ordination, delayed & impaired vocalization, language development challenges. Why?
- Pre-adolescent and adolescent brain development: Social stressors, hormonal changes, poor physical habits, social media transforming the world before our eyes.

Health science research

- What are the implications for fetal health or breast fed newborns if the mom is eating incorrectly? Infant dietary choices?
- *An inflammatory diet* is one modifiable link between cancers, heart diseases, obesity, strokes, Alzheimer's, dementia, arthritis, diabetes & more in adults, and hence their children's health.
- Brain function is equal or more dependent on the nutrient like effect of motion/movement stimulation being adequate throughout our lifetime.
- "we must address nutrition & lifestyle"

7 Enemies of a Healthy Brain

(toxins, malnutrition, physical laziness, mindlessness, lack of sun, stress, sleep deprivation.)
Pre-natal to Post-partum

- Pre-natal baby brain development is all about meeting mom and baby’s macronutrient requirements, having a nurturing emotional/mental environment, sufficiency of micronutrients, and avoidance of cytotoxins.
- Diet balance for mom related to mom’s insulin level, sugar regulation, and cortisone responses.
- Physical activity levels which impact all of this.
- Stressful home/work environments? What does this cause?
- Obvious requirements for Vit D3, Omega 3 fatty acids, B-vitamins, Probiotics, and other factors that keep mom’s Immune system in balance during this period of time.
- Cytotoxins (alcohol, medications, sweeteners, preservatives, smoke, pollution, EME, etc) and the lack of maintaining a MINIMAL BODY BURDEN.

WebMD with AOL Health

“In a study of newborn blood released by the Environmental Working Group, an average of 200 industrial chemicals and pollutants were found in umbilical cord blood from 10 babies.”

“Eighteen different forms of dioxin were also found in the samples, according to the report.”

Zwilich, T. Study Shows Toxic Chemicals in Newborns WebMD Medical News Reviewed
http://my.webmd.com/content/Article/108/109035.htm ARTICLE BELOW

“A World Health Organization report on the global burden of disease estimated that nearly a quarter of the global disease burden is related to environmental causes.”


Brain Development

- At birth most neural connections have not yet formed
- These connections are formed and refined as we age via
  - Movement
  - Nutrition
  - Environment
  - Experience
  - Genetics

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1 of every 150 – autistic  60% male, 1 in 15 American children (ADHD)
http://www.ewg.org/files/EWGkidsafe_reasons.pdf below

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Researcher Simon Baron-Cohen at Cambridge University.

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Critical brain development

- Brain has amazing capacity to grow and change
- For optimal development it is important to emphasize certain things at specific times of life
- The first ten years are the most vital in terms of brain growth and development

Developmental Neurobiology

- From the moment the brain starts growing in the womb and at time of birth up to age two, brain development is concentrated on the right side.
- Anything that interferes with prenatal development, the birthing process, or healthy growth during the first two years of life can affect how the right brain grows.
- Probable reason why a right brain deficiency is more common than a left brain deficiency.
- Left brain development predominates during 2-6 years; any developmental delay, nutrient lack, toxin, or activation could promote in-coordination, delayed language acquisition, hyper-immune response, and mental instability.

Right Brain Deficiencies

- Often diagnosed as:
  - ADD / ADHD
  - Asperger's
  - Autism
  - Tourette
  - Obsessive compulsive
  - Oppositional defiance
  - Nonverbal learning disorder
  - Pervasive developmental disorder
  - Developmental coordination disorder
  - Conduct disorder

Left Brain Deficiencies

- Often diagnosed as:
  - Dyslexia
  - Processing disorders
  - Central auditory processing disorder
  - Dyspraxia
  - Dysgraphia
  - Learning disability
  - Language disorder
  - Reading disorder
  - Acalculia
  - Selective mutism

Infant to Pre-Adolescent

- Brain development phases (see chart) and providing your child with adequate stimulation
- Adequate brain stimulation for your newborn to preadolescent.
- Stimulation grows the brain like nutrients. What sources of stimulation do our children predominantly get? Who (or what) is raising our children?
- What parts of the brain are "growing" and what is not??
Factors during infant to pre-adolescent

+ Breast feeding and mom’s macro/micro nutrient status
+ The growing & active brain is nutrient hungry, and our children are developing their immune system.
+ Raising a child on a clean, natural, whole food diet together with the knowledge of how to do this for themselves is important starting during this period.
+ The missing “childhood lessons” of how to eat, how to prepare food, and where food comes from

Part II

+ Benefits of multifaceted approaches to support optimal brain development to help address motor co-ordination, motor planning, language speech development.

How do we get to this point?

- Tall, aligned, great posture
- Healthy muscular tone
- Flexible, agile, coordinated
- Great happy disposition/attitude
- Calmness, focused thinker
- Well adjusted to social interactions and interpersonal interactions and relationships

Thalamic Pacemaker

- Pinault / Dechev (1992) – concluded that brain activity is not generated intrinsically but rather from the cerebellum and from muscle and joint afferents [Movement] which fire to the thalamus either directly or through the cerebellum.

Conclusion: Body movement drives the most central area of brain.
“If you wanted to create an education/work environment that was directly opposed to what the brain was good at doing, you probably would design something like a classroom.”

Adolescent years
- Very emotional time with physical, hormonal, social, and behavioral transitions.
- “one of the most stressful periods in our lives.”
- How our pre teens and teens navigate these years can influence them for a life: A balanced perspective and physical wellbeing, or something drastically different (Columbine HS)
- Modern day life is vastly different for these children due to social structure, media and the manner in which they communicate in the world. (texts, tweets, e-mails, etc)

The gut is like a “2nd Brain”
- Research at McMaster University:
  - gut bacteria influence brain chemistry & behavior
  - regular ingestion of good gut bacteria significantly lowers stress induced hormone Cortisone
  - Also regular consuming of the Lactobacillus strain caused changes in receptor expression for GABA
  - Lowered anxiety & depression
  - This is critical for young guts (children)

The “mind – gut” relationship
- Up to 95% of our Serotonin hormone is produced by the gut, in the gut itself!

“The annual prevalence of any psychotropics medication in youth was significantly greater in the US (6.7%) than in the Netherlands (2.9%) and in Germany (2.0%).”
Research linking gut health

- Mood and behavior
- Weight gain & metabolism
- Hormonal changes
- Immunogenicity (allergies)
- Inflammation
- Learning disorders (ADD)
- MMR vaccines and gut disruption

Symptoms of bad guts

- Abdominal pain (chronic)
- Irritability
- Blurring
- Excessive flatulence
- Anaphylactic reactions
- Shortness of breath
- Fatigue
- Fevers of unknown origin
- Gluten intolerance (celiac disease)
- Hemorrhoids
- Heartburn
- Malnutrition
- Migraines
- Muscle cramps
- Multiple chemical sensitivities
- Muscle pain
- Myofascial pain
- Poor exercise tolerance
- Poor immunity
- Poor memory
- Recurrent bladder infections
- Recurrent vaginal infections
- Recurrent skin rashes
- Brittle nails
- Hair loss
- Swollen lymph glands
- Food allergies
- Constipation
- Ulceration
- Liver failure
- Liver dysfunction
- Abdominal spasms
- Anorexia
- Anaphylactic reactions
- Depleted appetite
- Depression
- Digestive disturbances
- Chronic fatigue
- Diabetes

Conditions linked to Leaky Gut Syndrome

- Celiac disease
- Multiple Sclerosis
- Autism
- Fibromyalgia
- Chronic Fatigue Syndrome
- Irritable Bowel Syndrome
- Eczema & Dermatitis
- Ulcereative Colitis
- Candidiasis
- Chronic hepatitis
- Asthma & general inflammation
- Chemotherapy
- Cystic Fibrosis
- Multiple Chemical Sensitivities
- Accelerated Aging
- Endotoxemia
- Colon cancer
- Crohn's disease
- Food allergies
- Giardia
- Arthritis
- Pancreatic dysfunction
- Hives
- AIDS
- Alcoholism
- Ankylosing spondylitis
- Inflammatory bowel disease
- Liver dysfunction
- Malnutrition
- Pneumonia
- Alcoholism

Formula for a bad gut

- Poor diet habits
- High sugar intake
- Low fiber intake
- Highly acidic foods and drinks
- High intake processed foods
- Bad substance habits like alcohol & prescription drugs
- High exposure to smoke and toxic exposures (environment)
- Vaccines
- High stress levels
- Poor spinal health
- Spinal subluxations in digestive areas
- Lowered gut function/motility
- Changes in acidity/regularity
- Lack of physical activity

Bad “inflaming” diets

- Commonly contain wheat, rye, or barley based grain carbohydrates rich in phytic acid, and agitating proteins like toxic GLUTEN
- High dairy intake
- High acidity in sweetened, preserved foods and beverages
- Low soluble and insoluble fresh fiber content
- Low water intake or low H2O content foods
- High vegetable oil containing foods: containing refined veggie oils (>> omega 6) and polyunsaturated fatty acids
- Grain fed meats like beef or pork and certain farmed fish
- Low probiotic levels in foods
In all major depression studies, a significant decrease of the omega 3 fatty acids and/or an increase of the omega 6/omega 3 ratio was revealed.

Encephale. 2003 Jan-Feb;29(1):49-58. PMID: 12640327

FHP (Forward Head Posture)

- Forward head posture (FHP) may result in the loss of 30% of vital lung capacity. These breath-related effects are primarily due to the loss of the cervical lordosis which blocks the action of the hyoid muscles, especially the inferior hyoid responsible for helping lift the first rib during inhalation.

- The greatest concentration of receptors in human muscles and joints is found along the spine; the closer to the top of the spine, or head, the greater the density of receptors.

- This is why all toddlers, children, pre-adolescent & adolescent children should get chiropractic health assessments to evaluate this concern!


Brain – Spine Connection

- “90% of the stimulation and nutrition to the brain is generated by the movement of the spine”
  - Dr. Roger Sperry, (Nobel Prize Recipient for Brain Research)

- Additionally, Sperry posited that 90% of the brain’s energy output is used in relating the physical body to gravity. Only 10% has to do with thinking, metabolism, and healing.


Brain & Posture

- Movement stimulates the cerebellum and balance system
- The balance system stimulates the paraspinal muscles
- The paraspinal muscles contract and stimulate the thalamus and cortex (because joints are moving and compressing)

- Subluxation (misaligned joints and joints not moving optimally) disrupts brain health because it poisons proprioception (movement) from occurring normally/optimally

FHP (Forward Head Posture)

- Kaiser Family Foundation – young people, 8-18, spend in excess of 7 ½ hours / day on some form of mobile media
- Cephalgia (Feb, 2009) – demonstrated a strong association between increased forward head posture and decreased respiratory muscle strength
- Forward head posture reduces energy from thinking, metabolism, and immune function in order to deal with abnormal postural relationships

Notes of interest

- Posture is considered a reflection of tone of the erector spinae muscles and **poor posture is associated with decreased function of the cerebellum and higher brain**.
- Have you noticed in your children and other young people that poor, slouching, and hunched posture is becoming more prevalent in the population.

“Chronic back pain is associated with decreased prefrontal and thalamic gray matter density”

- People with CBP showed a 5-11% less neocortical gray volume – equivalent to the volume lost in 10-20 years of aging.
- Brain matter was less in cortex and right thalamus.
- Results is **brain atrophy!**
- 40-50% of children report back pains/neck pain.

Part III

- **Brain stimulation strategies to optimize brain development and maintain optimal brain function:**
  - Chiropractic care, exercise, nutrition, counseling and learning strategies.
- **Action plan and suggestions, Q & A**

Brain Tool Kit

- The following information will help you understand ways to maximize…..
  - brain function
  - brain capacity for stress,
  - judgment making & vocal speech function
  - decision making & motor planning
  - self-awareness, motivation levels, & confidence

Brain Stimulation Strategies

- **Relationships!**
  - What are their role in our brain health and function?
- **Learning & creativity**
  - Why is this important?

Nutritional Strategies

- **New science research!**
  - Found that certain whole foods, nutrients, as well as nutrient and lifestyle deficiencies contribute to inflammation & the development many diseases.
  - “we must change our nutrition & lifestyle especially if we want our children to develop optimally and live a long life.”
Innate (Optimal) Nutrition

Predominantly two food groups:
1. Meat and fish
2. Vegetables and fruit
   - Almost no carbohydrates (like grains, cereals, flours, pastas), no dairy, no artificial foods/packaging/preserving/coloring.

Veggies & fruit was rich in nutrients, fiber, probiotics, healthy calories, and toxin free!

Meat was wild & free grazing, and unaltered by hormones, pesticides, or unnatural feed sources.

Fish was bountiful, naturally caught, & unpolluted.

All fruits & veggies were fresh, vine ripened, naturally grown, and eaten raw!

Equal to 3-4 litres of water per day! (adults) [2-3L/day teens]

Brain composition 77% water

http://faculty.washington.edu/chudler/facts.html below

Brain lipids (fats), effect structure and function.

“the brain, (after adipose tissue), is the organ richest in lipids”

“omega3 deficiency alters the structure and function of membranes and induces minor cerebral dysfunctions”


Nutrition is critical to brain function

“Higher consumption of the long-chain omega-3 fatty acids had positive effects on “memory, mood and personality”


“The regulation of glycaemia (Blood sugar levels) improves the quality and duration of intellectual performance”

J Nutr Health Aging. 2006 Sep-Oct;10(5):386-96. PMID: 17066210 below

dehydration levels of 1% may adversely affect cognitive performance.”

Brain Stimulation Strategies

What is the strongest source of stimulation to the brain?

Physical Activity

The EFFECTORS of brain function are _______ ?

(name the 6 senses)

Smell, taste, ______, ______, ______, and ______!

The Brain and Behavior – Introduction to Behavioral Neuroanatomy

Accumulating evidence suggests that the cerebellum plays a role in affective and higher cognitive functions.

The progressive expansion of the cerebellum and the proliferation and specialization of its connections to the prefrontal cortex in the human contributes to the enhancement of mental and language skills.

The lateral hemispheres of the cerebellum may be more involved with strategic planning, learning, memory, and language.

The Cerebellar Cognitive Affective Syndrome

Brain 1998, Apr;121 (Pt4):561-79

Studies suggest that the cerebellum participates in the organization of higher order function

The cerebellum has long been implicated in disorders of cerebral development – cerebral palsy, autism, learning disorders.

Jeremy Schmahman, Mass General

Physical Activity

Exercise interventions are associated with significant benefits for patients with mild to moderate forms of depression as well as in reducing anxiety. These findings have led to the proposal that exercise may serve as an alternative or a supplement to traditional forms of therapy.


The Paradox of our time!
“Learning was 20 percent faster after intense physical exercise.”

Neurobiology of Learning and Memory
Volume 87, Issue 4, May 2007, Pages 597-609 abstract below

What does your child support themselves with?

This??? Or This??

Evolution Chair →

Death to the brain chair

Proactive Disc →

At home & school

Helping kids grow brains

Since the cerebellum and thalamus are important to the size and operation of the frontal cortex, if a child does not have normal or proper motor development, we would expect that the higher frontal lobe functions of cognition and behavior would be delayed in their development.

Likewise, helping a child to develop their motor skills should also help develop their non-motor skills.

Build the brain, don’t shrink it!

Voluntary exercise promotes neuroplasticity, which means new brain cell growth and expansion!

Exercise improves brain health!

Journal of Neurophysiology, July 2002

Chiropractic care

How does pediatric chiropractic care fit in?

Why should all children be under chiropractic care for life!

Chiropractic works because.

It is a safe form of gentle care for newborns, infants, children and expecting mothers.

The gentle stimulation to the joints of the spine, produce tremendous neural input to the cerebellum and association cortex of the brain. This is primarily motion (proprioception) information that drives all the higher brain functions, and this input triggers growth and enrichment of the motor cortex (learning centers, motor speech, decision and judgment making areas).

Unhealthy input from joints (like pain, stiffness) is corrected, and will no longer impair brain function.
Chiropractic Theory

According to Melillo and Leisman, childhood neurobehavioral disorders have many features in common: “Attention deficit disorder (ADD), attention deficit hyperactive disorder (ADHD), pervasive developmental disorder (PDD), obsessive compulsive disorder (OCD), Asperger’s syndrome, and Autism to name but a few, may be viewed as points on a spectrum of developmental disabilities in which these points share features in common and possibly etiology as well, varying only in severity and in the primary anatomical region of dysfunctional activity.”


Chiropractic Theory

Melillo and Leisman state that learning to crawl and then stand and walk two legged is responsible for the development and evolution of the large human brain. Postural muscles are the main source of brain stimulation by which motor and cognitive binding evolve.

Conclusion: Abnormalities in postural development or activity may disrupt cerebellar and cortical function.

Brain Anatomy and Functional Basics!

Chiropractic Research

One well known study of spinal problems in children was done by Biedermann studied 600 children who were diagnosed with Kinematic Imbalance due to Sub-occipital Strain (KISS Syndrome). He reports on improvements following gentle chiropractic care to improve the sick/stiffened joints in the neck including: torticollis, microsomy, scoliosis, motor asymmetries, and slowed motor development.


Case Reports

Previous case reports on chiropractic, ADHD and other neurobehavioral disorders all show improvement of symptoms with such care.

- An 11 year old boy with attention deficit hyperactivity disorder
- Experienced academic and behavioral improvements concomitant with reduced subluxations following the introduction of chiropractic, nutritional, visual and counseling therapy.


- A 10 year old boy with a chronic history of ADHD, otitis media, allergies and headaches.
- The child had a history of birth trauma, forceps delivery and plagiocephaly.
- The boy reportedly cried for over 3 months following birth and was diagnosed with colic. The child received gentle spinal adjustments and craniosacral therapy over 5 months
- Improvement in symptomatology by the end of the 4th visit. By the end of all reports of ADHD symptoms had abated and academic improvement in school was noted.

Phillips C. The effect of utilizing spinal manipulation and craniosacral therapy as the treatment approach for attention deficit hyperactivity disorder. Northwestern College of Chiropractic.
Case Reports

A 9 year old boy diagnosed with Tourette Syndrome, ADHD, depression, asthma, insomnia and headaches underwent chiropractic care to help upper neck subluxations.

An immediate reduction in symptoms following the initiation of care and complete resolution in six weeks of chiropractic care.


Case Reports

A 4-year-old boy who underwent chiropractic treatment and showed improvement in his ADHD symptoms.

After six treatments his temper tantrums ceased and aggressive behavior abated.

With chiropractic care, the boy was also placed on an omega 3 supplement, and given proprioceptive exercises.


Case Reports

An 8 year old child with ADHD who was diagnosed with upper cervical and sacroiliac subluxations and showed improvement with the Sacro-Occipital chiropractic technique.

The child had headaches, neck pain, constant blood shot eyes, and ADHD like symptoms.

Notably, all of these symptoms started after a fall 18 months previous. The patient’s mother indicated that prior to the fall, the child had normal development, activity, and learning skills.

Three spelling tests were also included in the report; one before the care began and two from after. Improvement in writing and spelling demonstrate improvement in learning skills and visual motor tasks.


Case Reports

Two other case reports exemplify the improvement in attention disorders in patients undergoing chiropractic care.

In the first report Pauli reports on nine adult patients complaining of attention issues who took the visual portion of the Test of Variables of Attention (TOVA). All patients showed improvement in their TOVA scores after undergoing chiropractic care.


Case Reports

In the second study Bastecki reports on a patient with cervical kyphosis who underwent Chiropractic Biophysics technique. The patient was a 5-year-old diagnosed with ADHD and treated by a pediatrician unsuccessfully with methylphenidate, Adderall, and Haldol for three years.

The child received 35 chiropractic adjustments over an 8 week period. Cervical curve measurements revealed a change from a 12 degree C2-7 kyphosis to a 32 degree C2-7 lordosis following chiropractic treatment. The child’s facial tics resolved and his behavior vastly improved with the child’s pediatrician stating that the child no longer exhibited symptoms of ADHD.

Bastecki A, Harrison D, Haas J. Cervical kyphosis is a possible link to attention-deficit/hyperactivity disorder. J Manipulative Physiol Ther 2004;27(8):e14

Case Reports

One interesting case study looked at EEG patterns (brain mapping) before and after chiropractic adjustments.

A 15-year-old patient with ADHD and his family had found that upper cervical adjustments relieved his symptoms and they wanted some objective evidence to show his school administration. This patient also had a history of frequent falls as a child and adolescent. His EEG showed a lack of synchronization of alpha and theta frequencies, similar to the findings in the aforementioned study on EEG biofeedback and ADHD.

Immediately following the adjustment, his EEG patterns dramatically changed to resemble patterns which were closer to normal. Though his handwriting did not noticeably change, he was able to perform a written task with more speed and less hesitation. The examiner also noted that while speaking with his father and professionals regarding his EEG after the adjustment, his social communication, attention, and focus improved. Interestingly, EEG patterns change in similar ways after biofeedback therapy and chiropractic adjustments.

Hospers L. EEG and CEEG studies before and after upper cervical or SOT category II adjustment in children after head trauma, in epilepsy and in “hyperactivity”. Proceedings of the National Conference on Chiropractic 1992:84-138
Build the mind with sleep

A study of almost 7,000 Alameda County residents, over a nine-year period, found that people who routinely slept six or fewer hours a night had about 70 percent higher risk of dying than did people of similar age who slept seven or eight hours a night.


“certain brain functions happen only while we are asleep”

“skimping on sleep stymies these crucial cognitive processes: some aspects of learning only happen with more than six hours of sleep.”

Scientific American Mind - August 7, 2008

Sleep for our children

How much sleep do newborns, infants, young children need every day?

Any Questions??

- Action Plan
- How to get started with your children?
- What Dr. Michael recommends:
  - Team work with Candace and other professionals
  - Get your children checked at Beacon Hill Chiro