

Just Wrestle: How We Evolved Through Rough And Tumble Play

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Introduction

We believe rough and tumble play is an important component of the ancestral health mismatch. While diet, sun exposure, sleep, and other lifestyle factors have received the lion's share of attention and study in the ancestral mismatch hypothesis, there is a growing understanding that movement is also a primary factor in the ancestral mismatch problem (Bowman 2014/2017; Leiberman 2014). Less attention has been paid to the role of play as a primary motivating system for movement, and an educational impulse that has implications across a huge range of psychosocial and motor development (Brown 2009; Forencich 2001; Gray 2013).

Rough and tumble play is both the most repressed form of play and yet arguably the most fundamental and powerful form of play (Panksepp 1998). Rough and tumble play has its own dedicated neural networks in the brains, is universal in all mammals, and has antecedents that are found throughout the group of bilateral animals, including birds, reptiles, and crustaceans (Burghardt & Byers 1998, Kelley 2011).

We will demonstrate that rough and tumble play is a key system to the ability for humans to develop physical coordination, strength, agility, spatial awareness, risk management, emotional management, social negotiation, cooperation, and moral systems.

References

1. Bekoff, Marc and Byers, John Alexander (eds.); 1998. *Animal Play: Evolutionary, Comparative, and Ecological Perspectives*. Cambridge: Cambridge University Press.
2. Bekoff, Marc; 2004. *Wild Justice and Fair Play: cooperation, forgiveness, and morality in animals*. *Biology and Philosophy*, September 2004, Volume 19, Issue 4, pp. 489-520. Netherlands: Kluwer Academic Publishers.
3. Berghänel, Andreas; Oliver Schülke, Julia Ostner; 2015. *Locomotor play drives motor skill acquisition at the expense of growth: A life history trade-off*. *Science Advances*. 1. . 10.1126/sciadv.1500451.
4. Bowman, Katy; 2014. *Expanded version 2017. Move Your DNA: Restore Your Health Through Natural Movement*. Propriometrics Press.
5. Brown, Stuart; 2009. *Play: How it Shapes the Brain, Opens the Imagination, and Invigorates the Soul*. Penguin Books.
6. Burghardt, G. M.; 2001. *Play: Attributes and neural substrates*. In Blass, E.M., Ed., *Handbook of behavioral neurobiology, Developmental psychobiology, developmental neurobiology and behavioral ecology: Mechanisms and early principles*, Vol. 13, pp. 327-366. New York: Kluwer Academic/Plenum.
7. Eberle, Scott; 2017. "Better Learning Through Recess: Hands-On Play Switches On Minds." *Psychology Today*, March 6, 2017.
8. Ernst, Douglas; 2017. "Calif. elementary school bans kids from playing 'tag': 'It's something we all did as kids'"; *The Washington Times*, March 14, 2017.
9. Forencich, Frank; 2001. *Play As If Your Life Depends On It: Functional Exercise & Living For Homo Sapiens*. Seattle, WA: AtlasBooks (Go Animal).
10. Fry, Douglas; 2014. "The Environment of Evolutionary Adaptedness, rough-and-tumble play, and the selection of restraint in human aggression." Chapter 7 *In Ancestral Landscapes in Human Evolution: Culture, Childrearing and Social Wellbeing*. Eds. Darcia Narváez, Kristin Valentino, Agustín Fuentes. Oxford University Press.
11. Gaumon, Sebastien & Daniel Paquette; 2012. *The father-child activation relationship and internalising disorders at preschool age*. *Early Child Development and Care*. Volume 183, Issue 3-4: Unique Contributions of Mothering and Fathering to Children's Development.
12. Graff, Amy; 2015. "First grader suspended for shooting classmate with finger gun." *SFGate*, March 5, 2015.
13. Gray, Peter; 2013. *Free to Learn: Why Unleashing the Instinct to Play Will Make Our Children Happier, More Self-Reliant, and Better Students for Life*. Basic Books Publishing.
14. Hanson, Hilary; 2015. "School District Bans Playing Tag, Claiming It's Not Safe For Kids," *Huffington Post*, September 25, 2015.
15. Kelley, M. Beth; 2011. *Move like a kid again: An analysis of Parkour as free-form adult play*. *WWU Masters Thesis Collection*. 165.
16. Leiberman, Daniel; 2014. *The Story of the Human Body: Evolution, Health, and Disease*. Vintage Press.
17. Panksepp, Jaak; 1993. *Rough and tumble play: A fundamental brain process*. In K. MacDonald (Ed.), *SUNY series, children's play in society. Parent-child play: Descriptions and implications* (pp. 147-184). Albany, NY: State University of New York Press.
18. Panksepp, Jaak; 1998. *Affective Neuroscience: The Foundations of Human and Animal Emotions (Series in Affective Science)*. Oxford University Press.
19. Pellegrini, Anthony D.; 2005. *Recess: Its Role in Education and Development*. Mahwah, N.J.: L. Erlbaum Associates.
20. Peterson, J.B. & Flanders, J.; 2005. *Play and the regulation of aggression*. In Tremblay, R.E., Hartup, W.H. & Archer, J. (Eds.), *Developmental origins of aggression*. (pp. 133-157). New York: Guilford Press.
21. Sheets-Johnstone, Maxine; 1999/exp. 2nd ed. 2011. *The Primacy of Movement*. Amsterdam/Philadelphia: John Benjamins University Press.
22. St. George, Jennifer; Richard Fletcher, Emily Freeman, Daniel Paquette & Caroline Dumont; 2015. "Father-child interactions and children's risk of injury." *Early Child Development and Care*. Volume 185, Issue 9. (pp. 1409-1421). Published online: 19 Jan 2015.
23. Vanderschuren, Louk J. M. J.; 2010. "How the Brain Makes Play Fun." *The American Journal of Play*. Board of Trustees of the Univ. of Illinois.
24. Whaley, Diane; 2007. "Life Span Development Approach to Studying Sport and Exercise Behavior" In Tenenbaum, Gershon & Robert C. Eklund, Eds., *Handbook of Sport Psychology*. New York: Wiley.
25. Whalley, Lawrence; 2001. *The Ageing Brain*. Columbia University Press.

Origins & Benefits of Roughhousing

Play is intrinsically rewarding because it is one of evolution's most powerful solutions for building animals that are physically strong, socially well adjusted and cognitively flexible. Rough and tumble play is perhaps the oldest form of play, with origins that go back at least 160 million years (Panksepp 1998). Play also has a distinct motivation circuit, like food seeking, dominance, or sex. It is one of our fundamental means of releasing rewarding neurohormones like dopamine, endorphins and opioids (Panksepp 1993, Vanderschuren 2010).

We need movement to develop normally (Bowman 2014/2017; Fry 2014; Pellegrini 2005), and we evolved to develop movement through play (Burghardt 2005). Rough and tumble play specifically teaches us the limits of our bodies, the way other bodies move, how to develop rhythm and coordination, what it is to feel and deal with pain, how to empathize with others, and how to create positive sum interactions (Bekoff 2004; Bekoff & Byers 1998; Peterson 2005).

Rough and tumble play has been found to be essential for physically mapping the body in infancy and toddlerhood, and understanding personal physical safety ranging from bigger locomotive challenges like when and where to balance, to smaller locomotive procedures like knowing how hard to high-five a friend. (Sheets-Johnstone 1999/2011). Berghänel et al. (2015) identified that juvenile macaques, particularly males, that focused on locomotor play in turn accelerated their motor skill acquisition and mastery, at times in exchange for slightly delaying their own physical growth. This and other studies (e.g. Bekoff & Byers 1998; Burghardt 2005) indicate the primal drive for primate play.

Through rough and tumble play animals, develop a sense of who is stronger without having to actually fight. Some form of wrestling is in fact common across much of the animal kingdom as a way to resolve dominance hierarchies. (Bekoff & Byers 1998; Peterson 2005)

Roughhousing also has a primary role in the development of social negotiation (Bekoff 2004). Panksepp (1998) also shows weaker rats will invite play with stronger rats only as long as the dominant rat allows the weaker one to win at least 30% of the time, in this drive to play creates a game that rewards prosocial behavior. In order for the stronger rat to choose to lose it must have some moral sense about the other rat, it has to care about how someone else responds. This is the root of our ability to cooperate. It is plausible that altruism co-evolved with rough and tumble play (e.g. Bekoff 2004; Burghardt 2005; Peterson 2005).

Play is seen by modern society as something unnecessary and trivial for adults. However, spontaneous interactive physical play has been documented in all primates as adults, and humans are in fact the most playful (e.g. Kelley 2011). St. George et al. (2015) found that fathers who engaged in rough and tumble play with their children resulted in safer risk taking by the children and less injury overall. Gaumon & Paquette (2012) identified that fathers roughhousing with their children negatively predicted internalizing behavior disorders.



Top Figure: Author roughhousing with his daughter.

Middle Figures: Rough & Tumble Play exercises performed at Evolve Move Play seminars.

Bottom Figure: Example of "King of the Log."

Consequences of a Lack of Roughhousing

We and others (Brown 2009; Forencich 2001; Gray 2013; Peterson 2005) have found that a lack of rough and tumble play is correlated to a host of problems. This follows logically because the capacities and qualities that we evolved to develop through this type of play are so fundamental.

Several studies have found that without physical play adults' brains and bodies deteriorate more quickly (e.g. Forencich 2001; Sheets-Johnstone 1999/2011; Whaley 2007, Whalley 2001). Brown (2009) found that a lack of play was a primary factor in predicting criminal behavior among murderers in Texas prisons. Children and adults that do not have some kind of physical play outlet have been shown to experience higher rates of isolation, depression, ill physical health (Brown 2009; Gray 2013; Kelley 2011; Peterson 20015), and mental decline in older adults (Whaley 2007).

Unfortunately, recess and tactile learning activities are being shortened or eliminated from schools at all ages. (Eberle 2017, Gray 2013). Our modern social systems and current views on roughhousing are creating environments where play, and specifically rough and tumble play, is being eliminated, penalized, and in some cases criminalized at a very young age (Ernst 2017; Graff 2015; Hanson 2015). Thankfully in some situations parents fought back and supported their children's right to roughhouse, but the overall attitude of fear of being sued or children getting hurt has made unstructured physical play a liability rather than a core curriculum.

Parents often attempt to replace rough and tumble play with sports or other structured physical activities; however the majority of our team sports or martial arts developed at a time when rough and tumble play was far more common in children's lives (Gray 2013; Pellegrini 2005). We hypothesize the pedagogy of most of these systems is unconsciously rooted in an assumption that children would develop normally through play before being put into sports or disciplines (Gray 2013).

Benefits from Re-Introducing Roughhousing

Thankfully the benefits of rough and tumble play can be adopted and cultivated at any age. Studies have found improved spatial and environmental awareness, cognitive plasticity, increased lifespan and quality of life, and improved social connection with locomotor play adopted at any age (Brown 2009; Burghardt 2005; Kelley 2011; Whalley 2001). Brown (2009) found that playing together helped couples rekindle their relationship and explore other forms of emotional intimacy. Our own work in teaching people the principles of and exposing them to roughhousing has had effects far beyond our expectations. We have had students report to us how it improved their relationship with their children, their spouse, their sex life, and their performance in sport or martial arts.

Conclusion

Roughhousing is an essential part of our primal, ancestral human development, yet modern society has suppressed it down and out of our everyday behaviors. Ours and others' analyses demonstrate the need and value of roughhousing, and consequences of depriving humans of roughhousing. We also identified some benefits of re-introducing roughhousing to regular practice. We provided example methods for re-introducing rough and tumble play into an adults' daily practice, which could be used for multiple age groups, demographics, and comforts with roughhousing. We hope that this paper inspires people to consider a lack of rough and tumble play as an element of the ancestral mismatch problem, and that more ancestral lifestyle researchers and movement practitioners explore the benefits of roughhousing and adopt rough and tumble play into their practice.

Introductory Exercises For Roughhousing

We have found that people who have not roughhoused in awhile, or ever, often have an aversion to roughhousing, thinking it is dangerous or they will hurt the other person or themselves. As a consequence, within the roughhousing elements of Evolve Move Play seminars we focus on fundamental skills in sensitivity to our partners, how to build rapport through movement and touch, how to recognize how we are internally responding to the intensity of interaction, and how to build a vocabulary of games and movements so we can play the games that most help us grow as humans. These are some examples of exercises we have found the easiest for beginners to start with:

1. Contact improv wrist-to-wrist

- **Description:** Two players connect wrist to wrist, then one initiates a movement. The goal for each player is to allow any motion the other player initiates, while always adding a second addition to movement. So if one player moves their hand forward, the other player can add movement either up or down, left or right, or rotating. This develops a quality we call additive. Additive movement is nonresistant like following in dance but also adding in new elements.
- **Key Findings/Uses:** These principles have a positive transfer to martial arts as well as acrobatic movements of contact improvisation dance. They also mirror the general principles of communication.

2. King of the log hand-to-hand

- **Description:** Two players stand on a slightly elevated, narrow surface like a log or curb. They join hands and try to manipulate each other's hand in order to make the other player lose their balance and step off the surface. This game allows players to compete with full intensity, while setting limitations that allow anyone to play it safely.
- **Key Findings/Uses:** We found all players enjoyed competitive play when they feel safe and have a significant chance of success. This game also introduces basic principles of pushing, pulling, balancing, understanding of body structure and movement sensitivity that apply to all grappling.

3. Torso tag

- **Description:** Each player's goal is to tag the other anywhere on the torso using the tips of the fingers or a soft fist shape, as if holding an egg. If using the fingertips, care needs to be taken to keep the fingers slightly bent and the thumb tucked in to prevent finger hyperextensions.
- **Key Findings/Uses:** This game is our introduction to the dynamics of striking. It allows us to safely introduce the principles of how to intercept and evade attacks, how to feint and draw a response, how to use non-telegraphic movement, and how to use footwork and rhythm to create optimal moments for and angles of attack.