

**“SAILING TOWARD HEALTH”: AN INNOVATIVE GAME TO  
COMBAT CHILDHOOD OBESITY**

**A Proposal**

**Childhood Obesity: The Nature of the Problem**

In recent years, our contemporary society has been increasingly interested in weight control. Some of this concern has had negative repercussions, manifesting itself in the successful marketing of unsafe drugs designed to combat obesity; the extensive use of radical surgical procedures that reduce one’s capacity for food as a substitute for healthy lifestyle choices; and a compulsive interest in achieving the weight of young starlets and famous models who strive to become thinner and thinner, often to the point of malnutrition and even death. Fortunately, most of this concern has had a positive impact, educating people about the dangers of obesity and providing them with critical information to help them attain and maintain an optimum weight without endangering their health.

At the same time, as adults have become ever more concerned with their own weight, and as they strive to overcome bad lifestyle choices made in the past, they have overlooked an even more important area of concern, namely: *the obesity of their children*.

Childhood obesity has become an epidemic of tremendous proportions. If not addressed successfully and with dispatch, its future consequences will be enormous in terms of increased mortality and morbidity and a substantive deterioration in the quality of life. Just how bad is this problem?

More than 10% of children 2 – 5 years old are overweight and over 15% of children 6 – 11 are clinically obese. This number increases to 16% for adolescents 12-19 years old.

Obesity rates among children have doubled since the early 1970’s and are expected to increase even more dramatically in the future, Doubling once again by 2010.

Not only are our children overfed, they are undernourished as well since the high caloric foods eaten by obese children generally lack the essential nutrients they need to grow into healthy adults.

Children are reaching unhealthy weights younger and younger, and more and more obese children are experiencing the negative side-

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effects associated with this condition including poor growth patterns, reduced lung capacity, joint and muscle problems, type 2 diabetes, hypertension, and cancer



It is expected that this rapid increase in childhood obesity will shorten a child's lifespan by 2 – 5 years. *For the first time in history, parents are expected to live longer than their offspring because of childhood obesity.*

The impact on the community will be equally dramatic in terms of increased health care costs and decreased future productivity due to the onset of a variety of diseases that obese children will suffer from later in life.

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Children become obese for many different reasons, both *internal* and *external*.

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Some children are inherently predisposed to gaining weight because of *internal biological factors* that contribute toward obesity, including such things as family genetics and metabolism rates. Children who are biologically predisposed to gaining weight face a special challenge, but it is a challenge that can be won (or lost), depending on the nature of the *external environmental factors* to which they are exposed.

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These external considerations, which are more subject to outside control, include a wide range of factors associated with the culture in which the child lives; his socioeconomic status; his family's viewpoints regarding obesity and health; and the extent to which he is (or is not) exposed to negative influences associated with food in his school environment.

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**Unfortunately, the nature of contemporary society contributes to childhood obesity. The fast pace and competitive nature of the world in which we live, the bombardment of media ads designed to sell food, and the increasingly technological environment in which mental prowess has replaced physical labor, have led to a sedentary life style and the increasing consumption of fast foods that are high in calories and low in nutrition.**

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Children today tend to eat on the run, are driven to school rather than walking there, and spend much of their time using the computer or playing video games or watching TV where they sit on the couch for hours and hours, rather than exercising, and where they are enticed to eat the very foods that will lead to obesity.

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Studies show that children whose main source of entertainment is TV or video games are at significantly greater risk for being obese than their more active peers. According to a study by the Kaiser Family Foundation, children are exposed to some 40,000 TV and media ads a year, most of which are food related. Every 5 minutes, children are looking at some TV ad urging them to eat their product, and 43% of these commercials are marketing foods that are either high in fat or high

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in sugar. These ads are enormously successful. Children (or their parents) *do* buy these fattening foods and they do so in great numbers. It has been estimated that children eat 167 extra calories for every hour they watch TV, and the sedentary nature of this pastime mitigates against their burning off these excess calories through exercise.

The school environment can have an equally negative impact on the child. Vending machines filled with sugary treats are everywhere. Children consume some 40% of their total calories while at school, but unhealthy snacks are readily available in 43% of the elementary schools; 74% of the middle and junior high schools, and 98% of the senior highs.

Perhaps the most important factor influencing obesity in children are the messages they receive from their family. If parents eat too much and get no exercise, their children will follow the same pattern with the same negative results. Significantly, *the single factor most closely associated with a child's future weight is the weight of his mother.*

Children thereby become obese for many different reasons, and many different, often complex interactions among these factors come into play in determining whether a given child will, or will not, suffer from obesity. However, the complexity of addressing this critical issue should not, indeed, *must* not, deter us from implementing active interventions designed to counter this epidemic.

These interventions must take place on many different fronts: in the family, in the schools, in legislative bodies, in the media, in the food industry, and in the community. It must be a collective mission and, if possible, a mission initiated early in the child's life. Good nutrition is especially important during the first few years of life when the child is growing fastest. Moreover, children who are overweight as preschoolers are five times more likely to be overweight when they reach the age of twelve.

In short, children should be introduced to good lifestyle choices early in life. The foundation for healthy eating and an exercise regime should be instilled in children when they are still toddlers.

Prevention is critical in meeting this challenge, and educational strategies, i.e., the development, selection and use of effective educational tools and methods, are vital to such prevention. Few would argue this contention. However, educating children about the importance of healthy eating and regular exercise, and motivating them to change their lifestyle in order to accomplish these objectives, represents a special challenge.

### **Educating Children About Obesity: A Special Challenge**

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Think how difficult it is for *adults* to lose excess weight and maintain a healthy lifestyle. Everyone knows how to stay thin: simply expend more energy through exercise than you take in through food. If it's so easy, why do so many people fail in their battle to control their weight, and why is the market flooded with an unending onslaught of books that purport to have some magic formula for staying thin? Staying fit and healthy requires discipline, motivation, and a clear understanding of the negative consequences of giving in to one's urges. It's *not* easy, even for adults. Think how much harder it is to educate *children* about healthy choices and to motivate them to do things that seem more like punishment than pleasure. Children are easily bored, have a short attention span, and, feeling indestructible, have a hard time seeing a connection between the French fries they eat today and a possible artery blockage forty years later.

The approach used in educating children about childhood obesity must therefore be different from that used in dealing with adults. Unfortunately, many educational programs that target children and attempt to educate them about healthy choices fail to recognize this vital distinction. These programs are likely to fail because children see them as boring, tedious, and unrelated to their everyday lives. They necessitate drastic changes in the child's current life style and deprive him of immediate pleasures he has come to enjoy. They also involve some type of outside intervention, implying an element of force and a loss of free will that challenges a child's natural tendency to rebel and to test his limits when dealing with his parents. It follows that children often associate these educational programs with parental nagging in which they are being forced to do something that really don't want to do while being deprived of something that gives them considerable immediate pleasure. The constant bombardment of TV ads, enticing them to eat the very same foods they are told to avoid, only strengthens their resistance to positive change.

A new approach is needed ----- an approach that takes advantage of a child's natural instinct to "play" and his inherent enthusiasm for activities that are "fun". It must be interesting, it must be informative, and it must involve active participation by the child, giving him the opportunity to make free and independent choices and then, to assume responsibility for the consequences of these choices.

Little information is available on the relative effectiveness of different educational strategies in educating children and motivating them to not only learn, but to truly *understand* what is being taught. Fortunately, needed studies are now being undertaken and the results of these studies are gradually being disseminated. The findings clearly corroborate the need for innovative educational approaches when dealing with children.

Gould's extensive analysis of studies conducted in this area is particularly helpful in this regard. For example, Brandura and Schund found that children are motivated by three critical elements:

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*Rewards which are immediate in nature, and not promised at some time in the distant future.*

*Curiosity, in terms of both sensory curiosity, stimulated by audio or visual effects, and cognitive curiosity, inherent in constructive feedback which motivates the learner to understand, and not just memorize, what actions must be taken.*

*A sense of challenge, produced by introducing various levels of difficulty designed to test the child’s understanding and motivate him to undertake, and master, increasingly difficult tasks.*

All of these requirements, when taken together, produce an element of fun and excitement. As such, they must be incorporated into any strategy designed to teach children and motivate a change in their behavior.

In a similar vein, Steven Johnson, in his book, ‘Everything Bad is Good for You: How Popular Culture is Making Us Smarter’, also criticizes more traditional teaching methods in which information is communicated through “a barren string of words on a page” or is force-fed to children during boring lectures in which the child is little more than a passive receptacle for information he neither understands or has any interest in.

Marco Visscher agrees. In his article “ Reading, Writing and Playing the Sims”, Visscher complains that traditional educational techniques produce children who memorize facts by rote but never learn how to think and analyze situations, i.e., they are taught to recite information blindly but lack the ability to use this information in a creative way in order to solve problems.

In short, there is general agreement that teaching methods are most effective when they are fun, when they are challenging, and when they are interactive. The rewards of goal achievement must be immediate in nature, and the child must be made to feel a sense of power through his ability to control his own destiny by making well thought out decisions that are both wise and knowledgeable.

More than ever before, children of today, living in a multi-media world that constantly bombards them with rapidly changing images, are easily bored and easily distracted. Traditional teaching methods must be changed to accommodate this shift through the introduction of innovative techniques that are fun, that are exciting, and that are highly interactive.

*Computer games meet all of these requirements. “Computers and the Internet have created endless new opportunities for educational methods” that draw upon the gaming concept, and we are fortunate to live in a time when the technology needed to develop such games is readily available.*

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Building upon the modern child’s special skills and interests in information technology, Dr. Richard Visser, an eminent authority on the subject of childhood obesity, has developed just such a game. After extensive research focusing on an identification, analysis and evaluation of other games designed to address healthy living using an interactive gaming approach, including the “Dutch Pyramid Food Guide”, Dr. Visser has developed a unique and innovative video game that is destined to revolutionize contemporary thinking on the best way to educate children about obesity and motivate them to make positive changes in their behavior.

He is now requesting funding to finance the final development and testing of this unique computer game and to implement its widespread distribution.

**“Sailing Toward Health”: An Innovative Game to Prevent Childhood Obesity**

Dr. Visser’s proposed game, “Sailing Toward Health”, challenges traditional methods of educating children about obesity, and it does so in many ways, not the least of which is his development of a new, improved *food pyramid*.

**The USDA Food Pyramid and Blast-Off Game**

The concept of a *food pyramid* has long been used as a visual tool for food labeling and for educating people about good nutrition. A new food pyramid, designed to convince Americans to follow recommended dietary guidelines, was developed in 2005 by the USDA in conjunction with food retailers and food manufacturers. The USDA also incorporated this food pyramid into a game they developed, called “Blast Off”, which was specially designed to educate children about the need to make healthy food choices. Unfortunately, this new food pyramid, and the associated computer game, leaves much to be desired.

First, the USDA visualization is presented in the form of a pyramid with six different colored lines going from its base to the peak of the pyramid. Each line represents a different food group, with healthy foods concentrated at the base of the pyramid, and herein lies the problem.

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# Anatomy of MyPyramid

## One size doesn't fit all

USDA's new MyPyramid symbolizes a personalized approach to healthy eating and physical activity. The symbol has been designed to be simple. It has been developed to remind consumers to make healthy food choices and to be active every day. The different parts of the symbol are described below.

### Activity

Activity is represented by the steps and the person climbing them, as a reminder of the importance of daily physical activity.

### Moderation

Moderation is represented by the narrowing of each food group from bottom to top. The wider base stands for foods with little or no solid fats or added sugars. These should be selected more often. The narrower top area stands for foods containing more added sugars and solid fats. The more active you are, the more of these foods can fit into your diet.

### Personalization

Personalization is shown by the person on the steps, the slogan, and the URL. Find the kinds and amounts of food to eat each day at MyPyramid.gov.



### Proportionality

Proportionality is shown by the different widths of the food group bands. The widths suggest how much food a person should choose from each group. The widths are just a general guide, not exact proportions. Check the Web site for how much is right for you.

### Variety

Variety is symbolized by the 6 color bands representing the 5 food groups of the Pyramid and oils. This illustrates that foods from all groups are needed each day for good health.

### Gradual Improvement

Gradual improvement is encouraged by the slogan. It suggests that individuals can benefit from taking small steps to improve their diet and lifestyle each day.



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There is a natural inclination for people to want to reach the top of the pyramid which is associated with “success”, but when the top of the pyramid is reached in the USDA visualization, the climber is rewarded with “junk food”, not healthy nourishment. By concentrating healthy foods at the base of the pyramid, the USDA is inadvertently sending out a message that is just the opposite of the message it wants to convey.

Second, the width of the colors do not correlate with the amount of recommended food for each food group, making it impossible to determine just how much (or how little) of a given food group should be eaten.

Third, the colors chosen to represent each food group aren't those one would normally associate with the particular food represented. For example, Fruits are depicted in red and meats and beans are shown in purple which aren't the colors one would use to describe these products.

Fourth, no distinction is made between whole grains, which are healthy, and refined carbohydrates, which are not.

Fifth, the concept of a pyramid, in itself, isn't one that is easily committed to memory by either children or adults.

The USDA has also developed a computer game, called “Blast Off”, based on its new food pyramid. The game depicts a rocket ship that requires “X” amount of

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the right type of fuel, i.e., food and exercise, in order to successfully “blast off” into space. The player is asked to fill this fuel tank with enough food for breakfast, lunch, dinner and snacks and to choose up to 60 minutes of exercise. Food is chosen from the five major food groups. If the player chooses the right type and amount of food and does the necessary amount of exercise, he successfully blasts off into space. If he does not, his rocket ship explodes in a black mushroom cloud of smoke.

Since the game is based on the USDA food pyramid, it is characterized by the same problems associated with the food pyramid itself, as noted above.

### **A New (and Better) Game Based on a New (and Better) Food Pyramid**

Dr Visser’s proposed Food Guide, presented for the first time in 2006 at the Parlatino Conference in Sao Paulo, Brazil, and “Sailing Toward Health”, the companion interactive game he is in the process of developing, are much more effective tools that address the above deficiencies.

Dr. Visser’s guide for healthy living is depicted in the form of a sailboat, rather than a pyramid, with each sail representing a different food group. (*See Appendix for a detailed description of each food group*). This depiction is different (and better) than that used by the USDA in many respects.

The scene itself is dynamic and inviting. Rather than a single runner trying to reach the top of an inanimate pyramid, or a lone astronaut stranded in dark and foreboding outer space and facing ultimate destruction if he makes the wrong food choices, we see a beautiful sailboat moored on a beach with five sails of different colors and sizes. The sky is blue and the air is clean and fresh. A family is seen on the beach, playing, exercising and having a lot of fun together. The family dog is seen frolicking in the background. Unlike the food pyramid visualization which is basically stagnant, this scene is light and airy and filled with energy ----- a scene that focuses in on the bonds of home and family and one that draws children toward it and makes them want to participate. The dynamic quality of the picture thereby captures the interest of the child and makes him want to become a part of the group.

The sails, representing different food groups, vary in color and size, and the colors chosen for each sail are those one would normally associate with the type and proportion of food being shown. The size of each sail is also proportionate to the amount of that food that is recommended for consumption, from smaller amounts of protein to fruits and vegetables which can be eaten with little restriction. (This color coding can also be used in labeling different foods in the market, making it easier for shoppers to make good choices when selecting their food).

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Dr. Visser has incorporated “Sailing Toward Health” into an innovative game he is in the process of developing. His game places the child in the position of captain of a ship whose objective is to reach nine specific islands. The child’s ability to reach these islands, and to overcome the many obstacles he encounters during his journey, is determined by the food, exercise and lifestyle choices he makes. The healthier and more balanced the foods he chooses, the higher the sails ascend. The more exercise he does, the faster the ship goes.

The first island presents few challenges and is relatively easy for most players to reach, given its focus on basic nutrition, but as his journey progresses from island to island; the challenges become more intense, including such barriers as gale winds, storms, and pirate ships. His ability to overcome these increasingly difficult obstacles is determined by the quality of the food he chooses in the right proportions, and the amount of exercise he is willing to undertake. If his choices are poor ones and he fails to meet recommended nutritional and exercise requirements, the ship will sink at some point in this journey. If his choices are good on all counts, the ship will ride out the storms and defeat the pirate attackers, reaching the final island strong and victorious.

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Should the captain fail to reach his destination, he then meets with his crew members to review the reasons for his failure, be it poor food choices or inadequate exercise or inappropriate lifestyle decisions. Armed with this information, he can now undertake the same voyage with greater success.

This approach addresses many problems associated with other efforts to educate children about the importance of exercise, healthy food and a good lifestyle. The game requires total participation by the child who is directly responsible for the journey's success or failure, giving him a sense of power that only freedom of choice can bring. He isn't being forced to choose the right foods by a parent or teacher or other adult authority figure, he's making these decisions for himself. And, he is able to immediately see the consequences of his choices, both good and bad.

Using a gaming platform which is very familiar to children living in today's technological environment, this game is a far cry from other more commonly used educational methods that tend to be both boring and tedious. The game is "fun". It takes advantage of a child's natural instinct to "play" and, in doing so, imparts information much more effectively than can be done through tedious lectures or reading assignments. The end result is a child who now understands some critical guidelines about healthy lifestyle choices, and who remembers these guidelines because he has seen the consequences of ignoring them. He has been informed and empowered, and he has had a lot of fun in the process.

### Potential Uses and Impact of "Sailing Toward Health"

There is no limit to the number of settings in which "Sailing Toward Health" can be used, nor is there a limit to the number of men, women and children who can use this game as a vehicle for addressing the challenge of childhood obesity, whether it be to acquire personal knowledge about exercise and healthy nutrition or to impart this knowledge to others.

**The game would be an excellent teaching tool for use in the classroom where teachers who have been trained in its application can engage their students in an entertaining exercise that transforms the learning process from one of boredom and tedium to an experience filled with fun and pleasure. Indeed, this proposal incorporates a request for funding which would facilitate free distribution of the game to elementary schools throughout the country. The game can also be used directly in the home where every member of the family can benefit from the knowledge and entertainment it provides. In implementing this proposal, specific plans will be developed to assure the greatest possible impact while avoiding possible duplication.**

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Provision will also be made for widespread public marketing and distribution of “Sailing Toward Health” so that it can be purchased by parents and teachers alike for use in the home as a learning tool.



This game, which is patterned after the highly successful *Re-Mission* game produced by Realtime Associates for children with cancer, could have a tremendous impact and produce dramatic results by *first*, improving access to, and retention of, valid information on nutrition, lifestyle and exercise, *second*, subsequently incorporating this knowledge into the daily lives of children and their families and, *third*, producing changes in behavior leading to a reduction in childhood obesity and improved health status.

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### Developing the Game

The proposed game, “Sailing Toward Health”, will be developed by Realtime Associates, Inc., one of the longest standing independent entertainment studios in operation today. It will be a 3D computer based game played on a personal computer equipped with state-of-the-art hardware, and it will be considerably more complex than simplistic web-based games in terms of its sophisticated graphics and game-play patterns. This level of sophistication is needed in order to attract today’s children who are accustomed to an extremely rich interactive experience. The cost of developing “Sailing Toward Health” will be \$ 1,650,000.

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### Schedule

- Month 1 Creative brainstorming with all stakeholders and rough game ideas
- Month 2 Game design, draft 1 of 3
- Month 3 Game design, draft 2 of 3
- Month 4 Game design, final draft
- Month 5 Prototype production phase, month 1 of 3
- Month 6 Prototype production phase, month 2 of 3
- Month 7 Prototype production phase, prototype complete
- Month 8 Main game production, month 1 of 8
- Month 9 Main game production, month 2 of 8
- Month 10 Main game production, month 3 of 8
- Month 11 Main game production, month 4 of 8
- Month 12 Main game production, month 5 of 8
- Month 13 Main game production, month 6 of 8
- Month 14 Main game production, month 7 of 8
- Month 15 Main game production, game complete but in need of testing and clean-up
- Month 16 Software testing – Alpha to Beta, partial (software features)
- Month 17 Software testing – Alpha to Beta, complete (hardware features)

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Month 18 Software testing – final game complete



A pilot study will then be conducted which would identify and address any technical problems that might arise. The pilot study would also be designed to evaluate the extent to which the children, their teachers and their parents benefited from their exposure to, and participation in, "Sailing Toward Health". Were the information and messages easy to understand? Were they engaged throughout the game? Did they enjoy the game? Did they have fun playing the game? Were they motivated to change their behavior in a positive direction, transferring the things they learned about nutrition and exercise into their daily lives? Is there any tangible evidence of their success in terms of weight loss or improved health? The cost of the pilot study will be \$ 50,000.

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Dr. Visser's experience with his equally innovative "Extreme H Games Day" program has already provided clear evidence of the effectiveness of this approach. Based on the same "Sailing Toward Health" concept presented here, the "Extreme H Games Day" brings the key elements of Dr. Visser's sailboat to life. Using the same basic approach, this program presents children 6 – 17 years old with the opportunity to participate in four hours of fun and games designed to improve their knowledge about the importance of good nutrition and sufficient exercise and to motivate them to change their behavior in a positive direction. These are live sessions led by Dr Visser. There are classes and sports activities and dancing to Brazilian tribal music and martial arts. There are sessions on meditation and visualization, and classes on the selection and preparation of healthy food, during which the children make independent food choices and prepare their own meals under a chef's guidance. The children are in constant motion, going from one exciting activity directly into another before boredom can take hold. The atmosphere is fast-paced and dynamic and the kids see it as a day of fun, rather than a day of "classes". The response to this program, by both children and their parents, has been phenomenal.

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The "Extreme H Games" program is similar to "Sailing Toward Health" in many respects. Both put an emphasize on self-esteem..... on working through the child's inner (super) hero. Both involve active participation and involvement by the children and their parents, through such activities as preparing a healthy meal for oneself and one's sailing crew, and then celebrating success in reaching the next level with dancing and music. Both involve teaching the children new skill sets, whether these skills be those required to defend one's ship against pirate attacks or master Karate or a lively street dance.

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Once the pilot study has been completed and the game is ready for distribution, a marketing and distribution plan will be prepared designed to (1) identify schools that will be chosen to receive "Sailing Toward Health" free of charge for use in their classes and (2) develop a marketing plan designed to promote the sale of

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"Sailing Toward Health" to an even wider audience.

### Qualifications to Successfully Complete the Project



Dr. Richard Visser, the Director of this project, has had a long and distinguished career, during which he has attacked the problem of childhood obesity from many different perspectives -- as an academician, a clinical researcher, an educator, a communicator, an activist, an entrepreneur, an effective developer and implementer of innovative strategies and approaches, and a concerned citizen and parent.

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Dr. Visser earned a degree in Science and Business Administration from St. Michael's University in Vermont and a Doctorate of Chiropractic degree from Palmer College in Santa Clara, California. Childhood obesity was the subject of his PhD thesis when he received his degree in Medical Sciences from the University of Medicine in Havana, Cuba.

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Since then, Dr. Visser has addressed the problem of obesity and, more specifically, the pandemic of childhood obesity, on many fronts.

Hailed as one of today's most progressive leaders in holistic medicine, Dr. Visser is the founder and CEO of SimplyH, a global health organization based on an integrated approach to health and healing that effectively uses both western and alternative medicine to produce optimum levels of physical and psychological well-being. Working with the world's foremost authorities in the fields of nutrition, chemistry and wellness, he also developed SimplyH's *Wild Medicine* supplement line containing a proprietary blend of high quality, synergistic ingredients meeting all nutritional requirements.

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Dr. Visser applies his extensive knowledge in his own healing practice at the *Visser Wellness and Research Clinic* in Aruba which offers both western and alternative medical services.

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Dr Visser has been a trailblazer in the area of childhood obesity.

In the forefront of the industry movement to provide children with healthier food and beverage options, he is the founder of Toddler *Health*, a line of nutritious, easy to prepare drink mixes for children 13 months to 5 years.

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Dr. Visser, who is currently in the pre-production stages of a kids health show for the Discovery Channel, has also conducted numerous studies and written numerous articles on childhood obesity, including his extensive reports on his recent clinical study of obesity among the children of Aruba. His work has made a vital contribution to a greater understanding of the biological, sociological and psychological factors surrounding childhood obesity. This understanding has led to Dr. Visser's development of an innovative intervention plan, including a unique learning tool in the form of an engaging computer game designed to teach parents,

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children and teachers about nutritious food choices and the importance of exercise. Dr. Visser is also in the process of developing a reality - based TV series, "Raising Healthy and Fit Kids", on the work he does in the schools and the programs and games he has developed as he strives to bring a healthy lifestyle into each and every household.

Dr. Visser is a dynamic communicator, effectively sharing his extensive knowledge with his colleagues and with the public at large through published articles, his own television program, speaking engagements, and involvement in a wide variety of medical organizations such as the Caribbean Medical Association. He has spoken on the subject of childhood obesity at countless meetings, conferences and seminars including, most recently, the World Obesity and Weight Loss Congress. His obvious passion for the subject matter engages audiences and incites them to positive action.

Dr. Visser has an equally distinguished record of public service, including his recent election as a senator for the government of Aruba, representing health care, sports and well being.

During his long and illustrious career, Dr. Visser has collaborated on various training and research projects with other health industry notables, including Dr. Deepak Chopra. His natural healing expertise has also led him to work with a long list of distinguished clients including the Aruba Olympic Committee.

Dr. Visser is uniquely qualified to research, develop and implement a variety of intervention programs designed to counter the growing problem of childhood obesity. He adds a vital dimension to "Operation Fitness" in terms of his years of distinguished work in childhood obesity; his extensive knowledge of this area from both an academic and entrepreneurial perspective; the innovative intervention techniques he has developed and tested; and his ability to excite and motivate an audience.

**REALTIME, Inc. and its founder Dave Warhol, are imminently qualified to develop "Sailing Toward Health".**

**The company, founded in by Dave Warhol and a group of fellow design engineers at Mattel Electronics, is now one of the longest standing independent entertainment studios in operation. Since its inception, Realtime, Inc. has released over 85 consumer products on game platforms, ranging from the Nintendo Entertainment System of the '80's to today's PS2, Xbox and GameCube. It continues to support new video game consoles as they are released, adapting LucasArt's Loom to the TurboGraphics, extending Q\*Bert gameplay and graphics on to the Super Nintendo Entertainment System (SNES), and developing licensed and original SNES and Genesis games. (See the Attached for a complete listing of published titles and past products produced by Realtime, Inc.).**



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Realtime, Inc. is especially qualified to develop “Sailing Toward Health” because it is in the forefront of an emerging trend toward the development of “Serious Games”, i.e., interactive games that are designed to teach and educate the player in addition to providing entertainment. The Company has a special expertise in this area, having developed the breakthrough project *Re-Mission*, a full-scale 3D action game in which the player controls an experimental medical Nanobot in 20 pseudo-medically accurate missions in order to eradicate cancer and treat the complications of patients undergoing cancer treatment. This project, commissioned by HopeLab, has proven to be highly effective through a full-scale, double-blind clinical trial. “Sailing Toward Health”, will be patterned after this widely acclaimed *Re-Mission* game.



### Summary

The epidemic of childhood obesity shows no signs of slowing down. On the contrary, it is progressing at an ever increasing rate. If permitted to continue at current levels, the consequences could be enormous in terms of mortality and morbidity and a substantive deterioration in our children’s quality of life.

Children become obese for many different reasons, both internal and external. These causal factors range from an inherent predisposition to gaining weight, to negative influences at home and in the schools, to one’s socioeconomic status, to the very culture in which we live which contributes to childhood obesity through a bombardment of media ads designed to sell food and an increasingly technological environment in which mental prowess has replaced physical labor.

The causes of childhood obesity are both numerous and intricate. However, the complexity of addressing this critical issue cannot deter us from implementing active interventions designed to counter this epidemic. Intervention must take place, and such intervention must be implemented on many fronts: in the family, in the schools, in legislative bodies, in the media, in the food industry, and in the community. Unfortunately, educating children about healthy choices represents a special challenge. Children are easily bored and have a short attention span. They feel indestructible and see eating healthy food and engaging in exercise as punishment rather than pleasure. And so, they resist positive change.

A new approach is needed... an approach that takes advantage of a child’s natural instinct to “play” and his inherent enthusiasm for doing things that are “fun”. This approach must be interesting, it must be informative, and it must involve active participation by the child, giving him the opportunity to make free and independent choices and then, to assume responsibility for the consequences of these choices.

Today, more than ever before, our children, living in a multi-media world that constantly bombards them with rapidly changing images, are easily bored and easily distracted. Traditional teaching methods must be changed to accommodate this shift through the introduction of innovative techniques that are fun, that are

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exciting, and that are highly interactive.

Computer games meet all of these requirements, and Dr. Richard Visser, an eminent authority on the subject of childhood obesity, has developed just such a game, "Sailing Toward Health", which is designed to effectively counter this epidemic. He is now requesting funding to finance the development and testing of his unique computer game and to implement its widespread distribution.



## APPENDIX

### A GUIDE FOR HEALTHY LIVING

#### Introduction

People are living systems. As such, we have a remarkable ability to spontaneously adapt to changes that occur in our environment by modifying or altering our biological functions.

*Metabolism* is a critical biological function, consisting of a combination of chemical reactions that take place within the cells of every living organism over a period of time. It is the most important biological function because it releases the energy required for other types of biological functions to operate.

The process of metabolism cannot take place in the absence of two critical types of fuel. The first type of fuel is *oxygen*, which we take in from the external environment through our respiratory system. The second, equally important fuel is the *nutrients* contained in the various food groups we eat as part of our diet. The process of metabolism can only function well if we consume the right type and amount of food, (i.e., nutrients) required to produce the level of energy our cells need to perform the functions we demand of them.

It is therefore important to know the actual amount of energy expended by each individual. These energy requirements, in turn, determine the type and amount of energy needed and this, in turn, dictates the type and amount of food necessary to satisfy these requirements. *Exercise*, which consumes energy and has a direct effect on metabolism, is yet another important ingredient in our search for optimum physical and mental well being. A condition in which there is a perfect balance between the nutrients we get from the food we eat and the amount of energy we expend through exercise. Healthy nutrition, which involves the regular intake of various foods in recommended proportions, should therefore be based upon the need to provide sufficient fuel to support the energy one spends. It also requires increased water consumption and the consumption of large quantities of fruits and vegetables, a critical element in the five basic food groups that comprise the food pyramid.

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The “Balanced Diet Ship”, with its five sails, reflects this concept as it moves through a sea of plenty filled with sunshine, clean air, healthy food and physical activity on its journey toward a longer and healthier life.



Each of the sails propelling the Balanced Diet Ship forward represents a distinct food group. The three large sails represent the consumption of *water, fruits and vegetables, and carbohydrates*; the medium sail represents *fats*; and the small sail represents proteins. The size of each sail is correlated with the amount of food that should be consumed from the food group it represents.

**Water**  
**(represented by a large blue sail on the Balanced Diet Ship)**

health

Water is the principal component and most important element of every living organism, representing 50% or more of our total body weight. The importance of water as a nutrient is only exceeded by the importance of oxygen. Water is therefore represented by a large sail, reflecting the need to drink as much water as possible.

holistic

The physical and chemical characteristics of water make it an ideal medium for the distribution of chemical substances found in the body----- substances which are important to the metabolic process. Given its role as a general transport medium, water plays a direct part in enabling various biological functions to operate effectively.

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The total amount of water found in the body changes with age. In the newborn, it comprises up to 75% of total body weight. The percentage of water decreases as one grows older, down to 55-65% of body content in adult men and 50-55% in adult women. This difference between men and women is due to the fact that women have less muscle and more fat tissue. In a physiologically ideal situation, a male individual 20 years old and 1.83 m tall, with a body weight of 70 kg and in good health should have a body water content of about 40 liters.

healing

Total body water content remains relatively constant due to the action of two powerful reflex mechanisms: the sensation of thirst and a reduction in the volume of urine eliminated when total body water volume begins to diminish. Should the total body water content increase for any reason, the sensation of thirst tends to wane and the volume of water eliminated through the kidneys increases as well, producing the desired balance of body water content.

humanity

There are three principal sources of body water: water ingested as such; water found in food; and water generated by one’s cells as a by-product of the metabolism of carbohydrates, fats and proteins. The total amount of water ingested by an individual, either as water or as water contained in his diet, can vary widely, depending upon factors such as climate and type of food consumed. For example, oranges, watermelons, cantaloupe and similar fruits have a high water content per unit of weight, while the water content per unit mass of other foods, such as grains, legumes and tubers, is much lower. The need for water also increases in

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hot, dry climates and in situations involving increased respiration or what is known as “alveolar ventilation”.

Urine is the principal channel through which water is lost from the body. The amount of water lost through the skin is extremely variable and may occur as sweat, which is noticeable, or “insensible perspiration”, which is unnoticeable. It can also occur through fecal matter, the lungs and exhaled air.

It has been suggested that at least 1.5 liters of water should be consumed each day, but it is practically impossible to determine one’s true water needs in a given situation with any degree of precision because of the large number of factors that can increase or decrease water loss. Water nourishment requirements have been established with this in mind. Of these water requirements, over half are obtained from the water content of food with the remainder coming from the water we drink.

Water must be clean and drinkable and must not contain any physical, chemical or biological agents in significant quantities or any harmful characteristics that could adversely affect one’s health. Mineral content, or hardness, is also of particular importance and must be kept within certain limits. Consumption of so-called “hard water”, or mineral-rich water, places an excessive functional load on the kidneys which can cause severe balance disorders in the body if certain limits are exceeded. It can even lead to death which would occur if an individual were to drink sea water, for example.

At the other extreme, we find distilled or completely de-mineralized water which, in addition to causing other disorders, can have a negative impact on the dynamic equilibrium that exists between various mineral components of the cells that make up body tissues. It too can lead to death if allowed to persist for a sufficient period of time.

### **Fruits and Vegetables**

*(represented by a large green sail on the balanced diet ship)*

Fresh fruits and vegetables must be part of a varied, nutritious diet. These foods provide significant amounts of the vitamins, minerals, trace elements, dietary fiber and antioxidant nutrients that protect an individual’s health and are active in the prevention of disease. A diet consisting of large quantities of fruits and vegetables is one that is high in both taste and nutrition. Fruits and vegetables are therefore represented by a large sail, indicating the need to consume large portions of these types of foods in your diet.

Consumption of fruits and vegetables increases the antioxidant content of one’s diet which is currently thought to be a basic dietary requirement. Nutrition experts now recognize the contribution of fresh fruits and vegetables in helping to destroy or neutralize the oxygen-based free radicals generated as part of the human metabolic process, supporting the defense systems that reduce the adverse effects of these free radicals. The damage caused by free radicals, if extensive



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enough, can harm the body's cells and make it difficult for them to adapt to change. It can even lead to cell death. The consequences of these changes can be severe, and have been linked to the development of arteriosclerosis, cancer, inflammatory bowel disease, neuro-degenerative diseases, autoimmune problems such as rheumatoid arthritis, and the complications of diabetes.



Fruits should be eaten fresh in their natural state, and salads should be eaten raw due to the loss of vitamins and minerals that occurs during the cooking process. Preference should be given to dark-green and yellow or orange vegetables, and to fresh, unstrain vegetable juices with no salt or sugar added.

health

Fruits and vegetables also play a significant role in providing the required amount of dietary *fiber*. Not long ago, dietary fiber was thought to be an inert substance consisting largely of cellulose and having an insignificant influence on human health. However, it is currently suggested that insufficient fiber in the diet may contribute to the development of many diseases including colon and rectal cancer; diverticulitis; appendicitis; constipation; hemorrhoids; diabetes; and obesity.

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Much research has been done on the relative importance of dietary fiber, and some controversy exists as to which foods should, or should not, be defined as dietary fiber. However, there is general agreement on the value of a number of properties characteristic of this element.

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One important property of dietary fiber is its ability to retain water. This property makes a major contribution toward a well functioning digestive system. Dietary fiber also has the ability to form gels in the gastrointestinal tract, leading toward increased glucose tolerance and lessening the absorption of cholesterol and salt. Another important property attributed to dietary fiber is its ability to absorb calcium, magnesium, zinc and iron. The fermentation of dietary fiber in the colon also produces two elements, gas and energy, that are necessary for proper colon function.

healing

The consumption of a sufficient amount of dietary fiber therefore has a positive effect on the digestive system through increased fecal mass; increased stool fluidity; shortened intestinal passage time; dilution of solids found in the large intestine; excretion of nitrogen, fatty acids, cholesterol and salt through the feces; and the stimulated growth of beneficial bacteria. It also helps to reduce the absorption of carbohydrates, which increases glucose tolerance, reduces insulin requirements after meals, and increases the efficiency of glucose metabolism.

humanity

Currently, there is no definite agreement among researchers on the amount of dietary fiber that should be consumed daily, and there is even less agreement as to the type and variety of fiber that should be eaten. It has been suggested that consumption of 15 – 30 grams daily is sufficient for a healthy adult, and 3 – 4 grams a day is recommended for children two years of age or older. No recommendations have been made for younger children. Diets providing 6 grams of fiber or more are considered to be rich in this nutrient, which should form a regular part of every person's diet.

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Vegetables that should be eaten include chard, cabbage, lettuce, carrots, squash, beets, beans, peppers, onions, pumpkin, cucumbers, radishes, tomatoes, celery, eggplant, broccoli and okra, among others. Fruits that should be eaten include oranges, lemons, limes, grapefruit, mangos, papaya, bananas, guava, apples, pineapple, pears, grapes, apricots, peaches, coconut, cherries, mandarin, mango, anon, soursop, pineapple pear, coco, prunes, red currants, mamoncillo, medlar, strawberries, cantaloupe and watermelon, among others.



The importance of consuming large amounts of fruits and vegetables is reflected in the large size of the green sail representing this food group.

health

**Carbohydrates**

*(represented by a large orange sail on the Balanced Diet Ship)*

Foods containing carbohydrates are critical in that they provide the energy we need to function well and to lead an active life style. Of all of the dietary elements, carbohydrates, represented by a large orange sail, has to be consumed most frequently in order to meet the body’s energy needs. Sixty percent or more of an individual’s total energy needs must be satisfied through this food group.

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There are two basic types of carbohydrates: *complex carbohydrates* such as starch, and *simple or refined carbohydrates* such as sucrose, maltose, or lactose. Carbohydrates should preferably be eaten in the form of starch, which is absorbed into the bloodstream more slowly than simple carbohydrates. This slower absorption, as compared with the rapid absorption of simple carbohydrates, is beneficial because it does not produce the concentrated peaks of large glucose production that simple carbohydrates does and therefore does not require the production of large quantities of insulin by the pancreas. When combined with adequate amounts of soluble dietary fiber, carbohydrates will be digested more slowly, thereby improving glucose tolerance so critical to the prevention and control of diabetes.

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No less than 85% of carbohydrates eaten must come from starch, with the remaining 15% consumed through simple or refined carbohydrates. Foods containing high levels of starch include rice, wheat, corn, barley and rye. It is important that these foods be designated as “whole grain”, that is, grains that have not had their shell completely removed or depleted through industrial processing. Pasta is also an excellent source of carbohydrates, and pastas too should be “whole grain. Other sources of carbohydrates include potatoes, yucca, and bananas, among others. Foods containing high concentrations of simple or refined carbohydrates, which should be consumed in limited quantities, include jam, candy, donuts, cakes, cookies, sugary beverages and other foods containing large quantities of sucrose, maltose or lactose.

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**Fats**

*(represented by a medium yellow sail)*

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Fats are represented by a medium yellow sail, indicating that 25-30% of an individual's total energy needs should be met through this type of food.

The most common fats in the human diet are *triglycerides* and *cholesterol esters*. Triglycerides may be *saturated* or *unsaturated*, depending on the presence or absence of what are called "double bonds." If a fatty acid contains only one double bond between two carbon atoms, the fat is considered to be mono-unsaturated. Fat containing two or more double bonds are considered to be poly-unsaturated.

Of the total energy received through the ingestion of fat, 5–10% should be in the form of saturated fats; another 10% in the form of mono-saturated fats; and the remaining 10% as poly-saturated fats.

Fats may have an animal *or plant origin*. Animal fats are generally saturated fats. Food containing this type of fat is also generally rich in cholesterol. With the exception of coconut and palm oil, fats originating in plants, known as oils, contain a greater amount of unsaturated fat.

The fats we consume may be *visible* or *invisible*. Visible fats include fats used for cooking, such as oils, lard or bacon, or those served at the table, such as butter, cream cheese or margarine. Because this type of fat is visible, it can be easily avoided. Non-visible fat, on the other hand, cannot be seen, even though it is present in many of the foods we eat. These fats can be found in meat, fish, eggs, milk, and nuts, among others.

Fats are also classified as being *non-essential* or *essential*, depending upon the body's capacity to synthesize its own fatty acids. The non-essential group consists of fat produced by one's own body; essential fatty acids must be supplied through one's diet in quantities equivalent to 3–5% of an individual's total energy needs.

Excessive fat consumption is associated with many medium and long-term health implications. This is especially true of foods rich in saturated fat and fatty acids. Limited consumption of pork, beef, lamb, bacon, lard, butter, chicken skin, cream cheese, whole milk and fatty cheeses is therefore recommended. Coconut, palm and avocado oils also have a high saturated fat content. Fats that are liquid at room temperature, in contrast, are rich in polyunsaturated fats and can be found in vegetable oils such as olive, soy, corn, sunflower, sesame and peanut oils.

When preparing food rich in fat, especially fried foods, it is important to avoid overheating the fat or reusing it to the point where its essential qualities are altered. This can produce toxic substances in the fat leading to various illnesses, including cancer.

### **Proteins**

*(represented by a small red sail on the Balanced Diet ship))*

Food containing large amounts of protein is represented by a small red sail, suggesting that this type of food should be consumed in amounts smaller than those

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recommended for any of the other food groups.

Foods containing protein should satisfy 10-15% of an individual's total energy needs. However, the fundamental nutritional purpose for consuming proteins is not their use as an energy source but rather their role in the process of cell multiplication and the repair of body tissues.

Proteins are made up of simpler structural units known as *amino acids*. There are currently 22 different types of amino acids.

Amino acids too are classified as *essential* and *non-essential*. Non-essential amino acids can be synthesized from carbohydrate and nitrogen residues, whereas essential amino acids cannot be produced this way and must be obtained through one's diet.

Proteins must be digested before their constituent amino acids can be released and subsequently absorbed. The digestion of protein begins in the stomach and is completed in the small intestine, with help from the pancreas. The nutritional quality of the proteins found in food depends, among other things, upon their digestibility and upon their biological use and importance once they have been digested and their constituent amino acids absorbed. A protein is considered complete from a nutritional perspective if it contains all essential amino acids in the correct proportions, as is true for milk and egg proteins.

Dietary proteins can also be of *animal or plant origin*. Animal proteins tend to have a higher amino acid score and a higher level of digestibility, adding to their nutritional value.

Many experts believe that 50% of the total amount of protein consumed should be of animal origin and the remaining 50% of plant origin, although this may vary depending on the individual's life style, functional capacity and health.

Excellent sources of animal protein include milk, meat and meat products, free-range poultry, fish, eggs and internal organs such as the heart, liver and spleen. Plant-based foods, such as grains and legumes or beans, make the greatest quantitative contribution in meeting an individual's protein needs, especially in developing countries. When grains and legumes are combined in appropriate proportions, amino acid mixtures that significantly reduce the actual need for animal-based proteins can be achieved. Vegetables, tubers and other starchy foods provide very little protein, and any protein obtained from these foods is of poor nutritional quality.

Foods of animal origin are often related to food-borne illnesses caused by biological contaminants. It is therefore important to be sure that these types of foods are fully and evenly cooked by applying enough heat to allow the thermal center of these foods to reach 70 degrees. You should also avoid cross contamination from other uncooked foods or contaminated surfaces.

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