Easy as ABC, 123:

Integrating Nutrition and Activity in Early Childhood Learning to Build Lifelong Healthy Habits

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Why Preschoolers?

- 26% considered either overweight or obese
  - Low-income, minority, rural families disproportionately affected
- Not meeting nutritional or physical activity guidelines
- Critical window for obesity prevention efforts
  - Development

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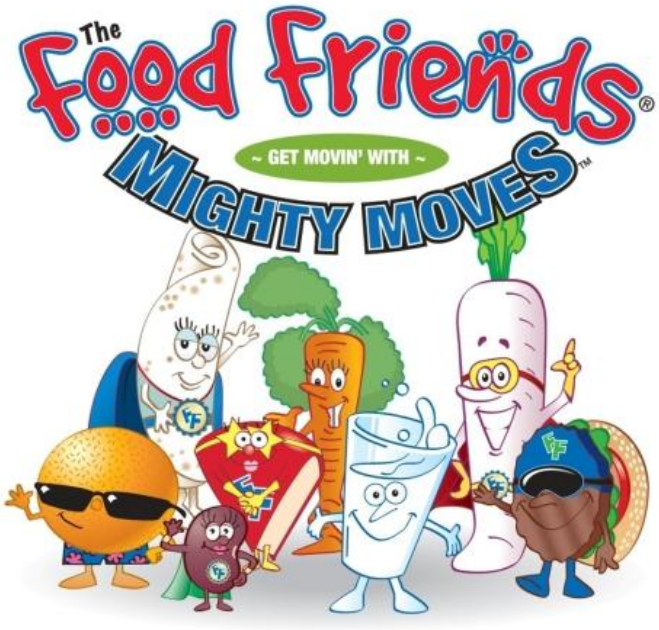
Program Goal:
Increase children's willingness to try new foods



Program Goal:
Enhance gross motor performance

Johnson, S.L., Bellows, L., et al. (2007). *American Journal of Health Behavior,* 31(1): 44-55.
Bellows, Davies, Anderson, Kennedy. (2013) Amer J Occupational Therapy:67(1); 28-36

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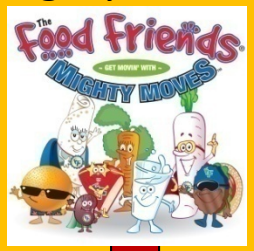
Fun With New Foods

Mighty Moves



Increase Willingness to Try New Foods

Increase Gross Motor Skills

Improve Self Competence

Dietary Intake

Physical Activity

Establish Healthy Habits to Prevent Future Weight Gain

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Eating and Physical Activity Study

Longitudinal Eating And Physical Activity Study

Goal: To Assess if the Effectiveness of a Preschool Nutrition and Physical Activity Program is Sustained in Early Elementary School

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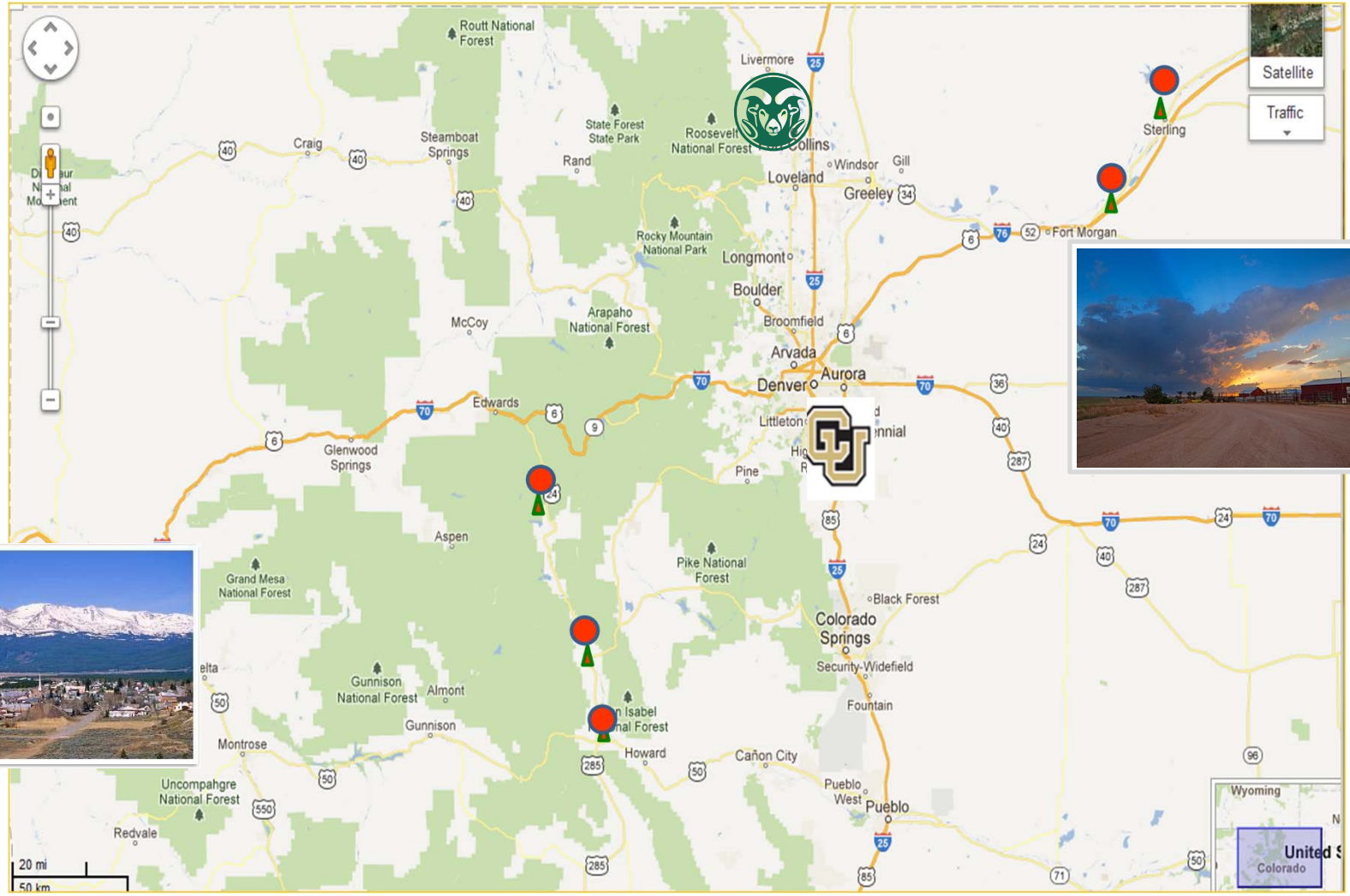
LEAP Communities



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Study Design

3 Cohorts

	Year 1	Year 2	Year 3
Grade	Preschool	Kindergarten	1st Grade
***The Food Friends* Intervention**	*Fun with New Foods* (12 weeks) & *Get Movin with Mighty Moves* (18 weeks)	*Super Taster and Mighty Mover - School* (5 monthly units)	*Super Taster and Mighty Mover - School & Home* (5 monthly units)
Assessment Period	Baseline (Time 1; Fall) Post-Intervention (Time 2; Spring)	1 year Follow-up (Time 3; Spring)	2 year Follow-up (Time 4; Spring)

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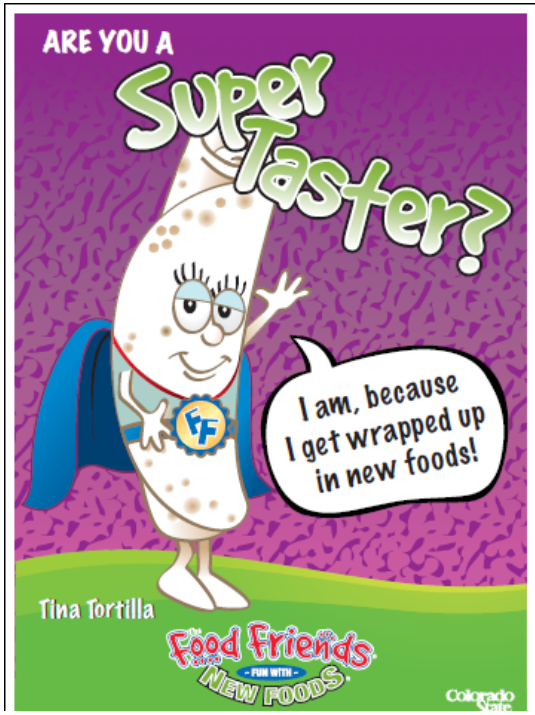

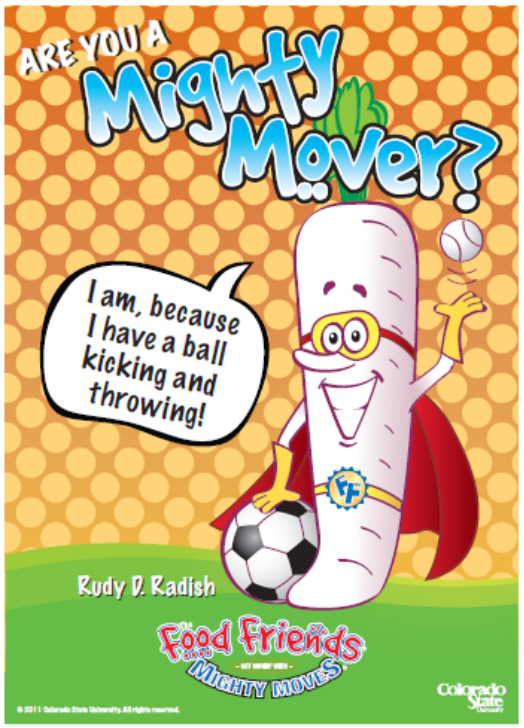

School-based Intervention

Treatment schools (n=2)

- *Food Friends* (12 wks) & *Mighty Moves* (18 wks) implemented in Pre-K
- Kindergarten and 1st grade 'booster' programming in classroom, cafeteria & school

Super Taster & Mighty Mover Club

- 1st Grade
- Monthly Direct Mail
  - Child Newsletter
  - Educational Enhancer
  - Parent Newsletter
- Reinforces/Promotes Super Taster & Mighty Mover messages

The Food Friends

Monthly Surprise! for Child's name

Each month you are going to get a monthly surprise from The Food Friends! It is something that will help you on your journey to be a Super Taster and Mighty Mover! This month it is a water bottle! Whenever you are doing moves it is important to drink water. Our bodies are made of water so we need to drink lots of it to be at our very best. You can take your new water bottle on all of your adventures and never feel thirsty again!

This month's Code Word: WATER AQUA

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ARE YOU A Super Taster?

Using all of your senses is as important when you are eating as when you are doing science experiments. Science and eating can be combined when you do food experiments. The best part of a food experiment is that at the end you get to be a Super Taster! But did you know that the mouth and nose work together when we are trying new foods? If you smell a food, it will taste different to you than if you were to plug your nose when eating. Try it!

1. *Pick a food to try* (tuna fish sandwich, bananas, pickles, or any other food).
2. *Pinch your nose closed*, take a bite of the food, and keep your nose closed as you chew the food.
3. Now *take a bite* without pinching your nose.

Child's name, can you taste the difference?

Fun Fact: You have over 10,000 taste buds in your mouth. They are even on the roof of your mouth. Each taste bud only stays on your tongue for a week before a new one comes up in its place!

What's happening this month with The Food Friends

Dear Child's name,
Hello, we are The Food Friends! We are here on a mission. A mission to help you become a Super Taster and Mighty Mover! Each of us has our own superpower that we use to try new foods. We also have a special mighty move that we get to use every day! This month you are going to learn about using your five senses. Then you are going to learn about new ways to move!

Sincerely,
The Food Friends

GREETINGS FROM HEALTHAPELPHIA

ARE YOU A Mighty Mover?

Just like food experiments, you can experiment by moving your body! You can jump up and down with a jump rope. Or stay still and shift your weight from one leg to the next just like Marty Milk*! Bella Bean's* favorite way to experiment is through making up her own dances! It lets her move her body in all kinds of ways. You can make up your own dance too! All you have to do is find your favorite song. When the music starts:

- Jump to the beat
- Shake your hips
- Clap your hands
- Let the music move you!

Now you have made your very own dance, write your moves down in your notebook so you don't forget them! Each day you can try to find a new way to move so that you can become a Mighty Mover!

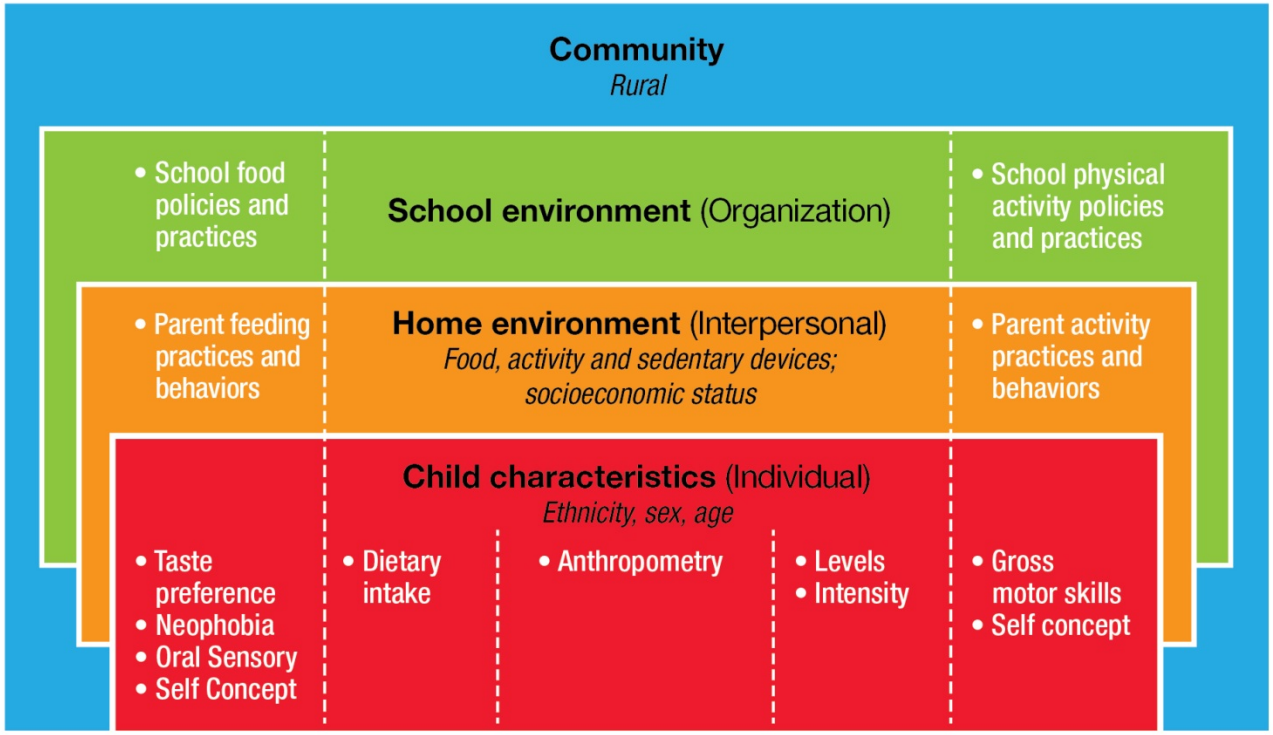
Child's name, what dance will you do today?

Family Fun Challenge: Breakfast Scramble

Materials needed: cereal box and scissors

1. Find a cereal or cracker box and take a good look at the front picture.
2. Cut the front of the cereal box or cracker box into 16 rectangular pieces.
3. Place them face down and then flip over once the time starts.
4. Put together the pieces like a puzzle to recreate the original cereal box.
5. See what member of the family can do it the fastest!

Colorado LEAP Model



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Participants by Cohort & Time

	Time 1 Fall Pre-K		**Time 2** Spring Pre-K		**Time 3** Spring K		**Time 4** Spring 1st	
Cohort 1	2010		2011		2012		2013	
Child	**95**		**86** (91%)		**74** (78%)		**86** (91%)	
Parent	79	83%	78	91%	41	55%	38	44%
Cohort 2	2011		2012		2013		2014	
Child	**119**		**113** (95%)		**103** (87%)			
Parent	78	66%	64	57%	49	48%		
Cohort 3	2012		2013		2014		2015	
Child	**19**		**18** (95%)					
Parent	16	84%	9	56%				
Total								
Child	**233**		**217** (93%)					
Parent	173	74%	151	70%				

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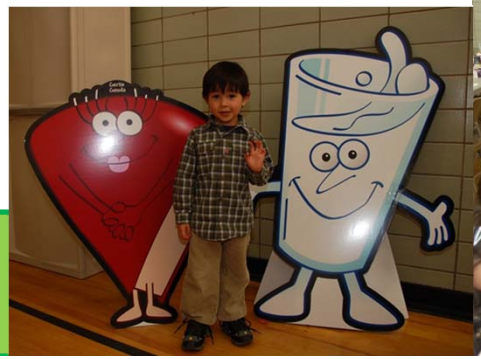
Participant Characteristics

Child

- Age: 55.8 (4.7) months
- Sex: 55% Female
- Ethnicity: 44% Hispanic
- BMIz: .5 (1.1)
- Weight Category:
  - Normal: 66.8%
  - Overweight: 15.9%
  - Obese: 14.4%

Family

- > 90% Mothers completed packet
- Education: 33% High School or less
- Income: 69% < 185% Poverty



Food Behaviors

Are they trying it? (baseline to time 2)

- 49% refused at least 1 food at baseline
  - Decreased to 23% in Intervention (I) & 33% in control (C)
- 63% used exploratory behaviors at baseline
  - Decreased to 31% (I) and 40% (C)
- Food Refusals are related to exploratory behaviors

"Just eat *something*"

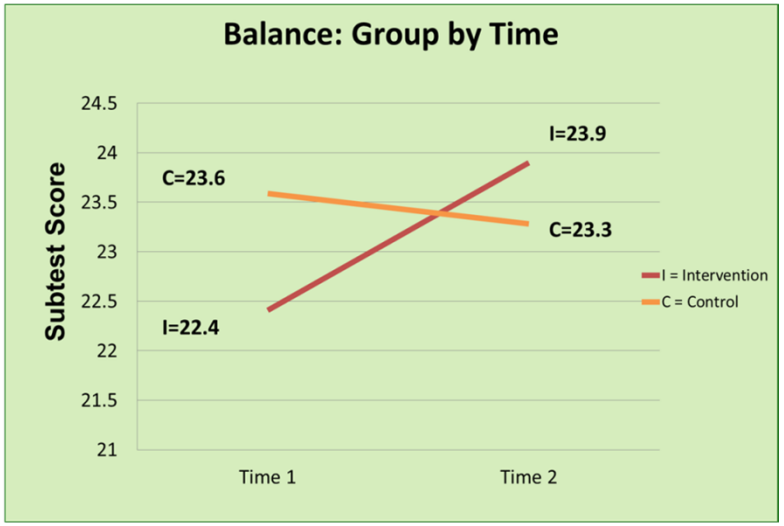
The more neophobic a child is reported to be, the more a parent:

1) pressures the child to eat
2) has concern about their child not eating
3) employs restrictive feeding practices

Gross Motor Performance

- A significant group by time interaction was found for
  - Balance (*P*=.006)
  - Running speed and agility (*P*=.017)
  - Upper limb coordination approached significance (*P*=.077).

- The intervention enhanced the rate of gross motor development, however children are still below norms for their age/sex at Time 2.



Note: No significant differences existed between groups at Time 1. Point scores for Balance Subtest range from 0 – 37 (mean of norming sample ~ 26). Higher scores reflect more advanced balance skills.

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Home Environment

The availability of foods in the home is linked with child's dietary intake (FFQ) of key foods– vegetables, fruit, whole grains.

- Fruits (R^2= .06,p<.01)
- Vegetables (R^2=.04, p<.01)
- Whole grains (R^2=.02, p<.05)
- Sugar Sweetened Beverages (R^2=.31, p=.01)

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Potential Impact

- More evidence of longitudinal relationships among children's weight status and
  - children's food preference and food consumption &
  - motor performance and physical activity
  - the influence of the home environment
- Examine children's eating and activity habits from an ecological perspective
- Result in specific recommendations for obesity prevention interventions among young children

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Future Directions

- Address multiple audiences
- Address multiple settings
- Develop messages & strategies that resonate with parents
- Capture & build on Pester Power
- Develop/Improve measurement instruments
- Train next generation of EC teachers & providers
- Balance policy with practicality

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Current LEAP Research Team

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CSU & CU Staff, Students and Interns

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Opportunities & Environments

Questions??

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