



Wellness

The USDA Wellness Policy“encourages a school environment that promotes students’ health, well being, and ability to learn by supporting healthy eating.”





The school wellness policy for Alaska's Kodiak Island includes the consumption of fish.

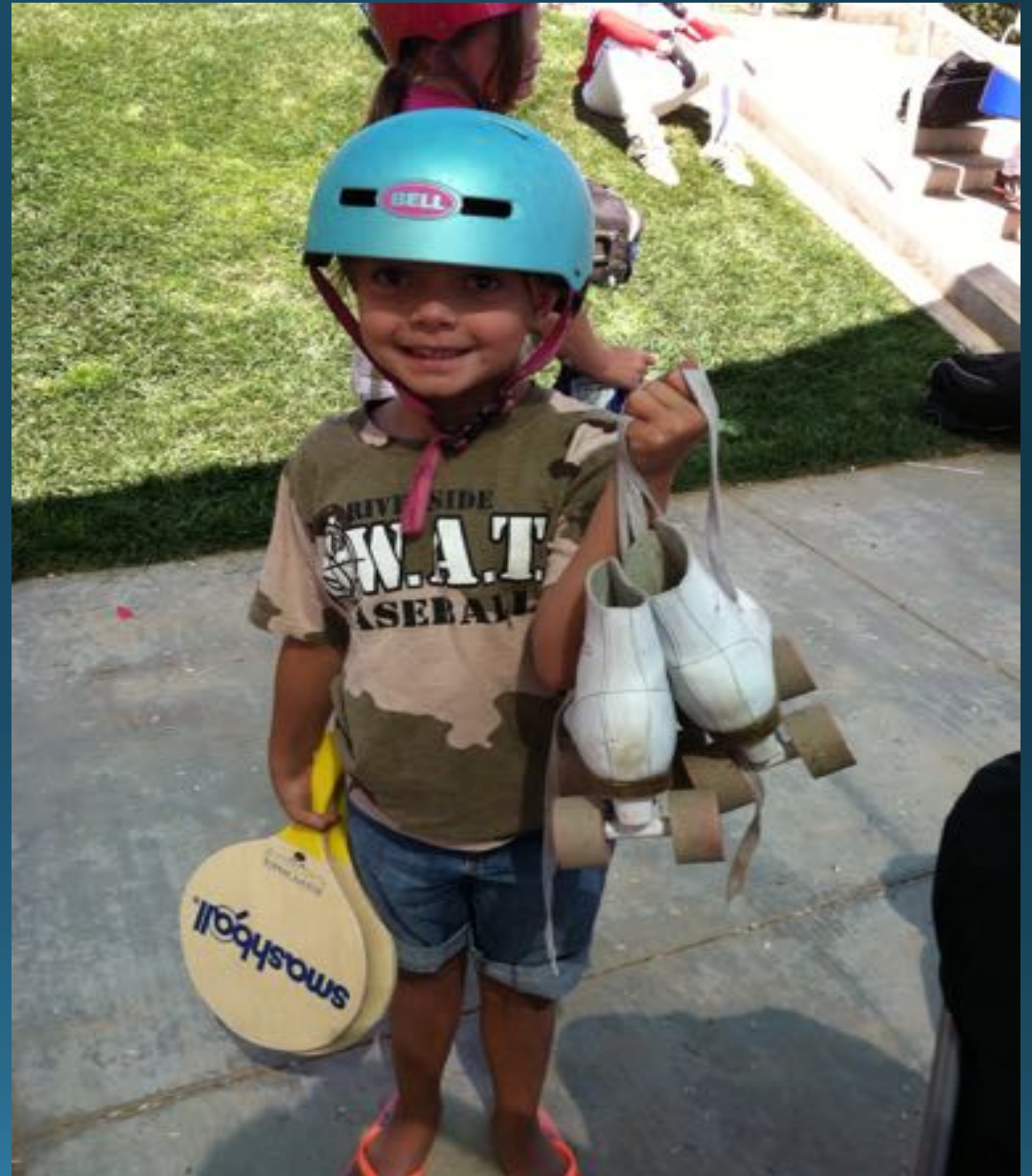
Website: dnr.alaska.gov



Why Fish?

*Fish has DHA
and EPA fatty
acids.*

*DHA is a major
component of
brain tissue.*



Researchers say the brain needs Fish:

- FISH helps heal the brain before + after injury
- FISH increases the number of healthy neurons
- FISH reduces inflammation in the brain

(Source: <https://brainfoodbrainfood.com/category/concussion-tbi-therapy-dha/>)

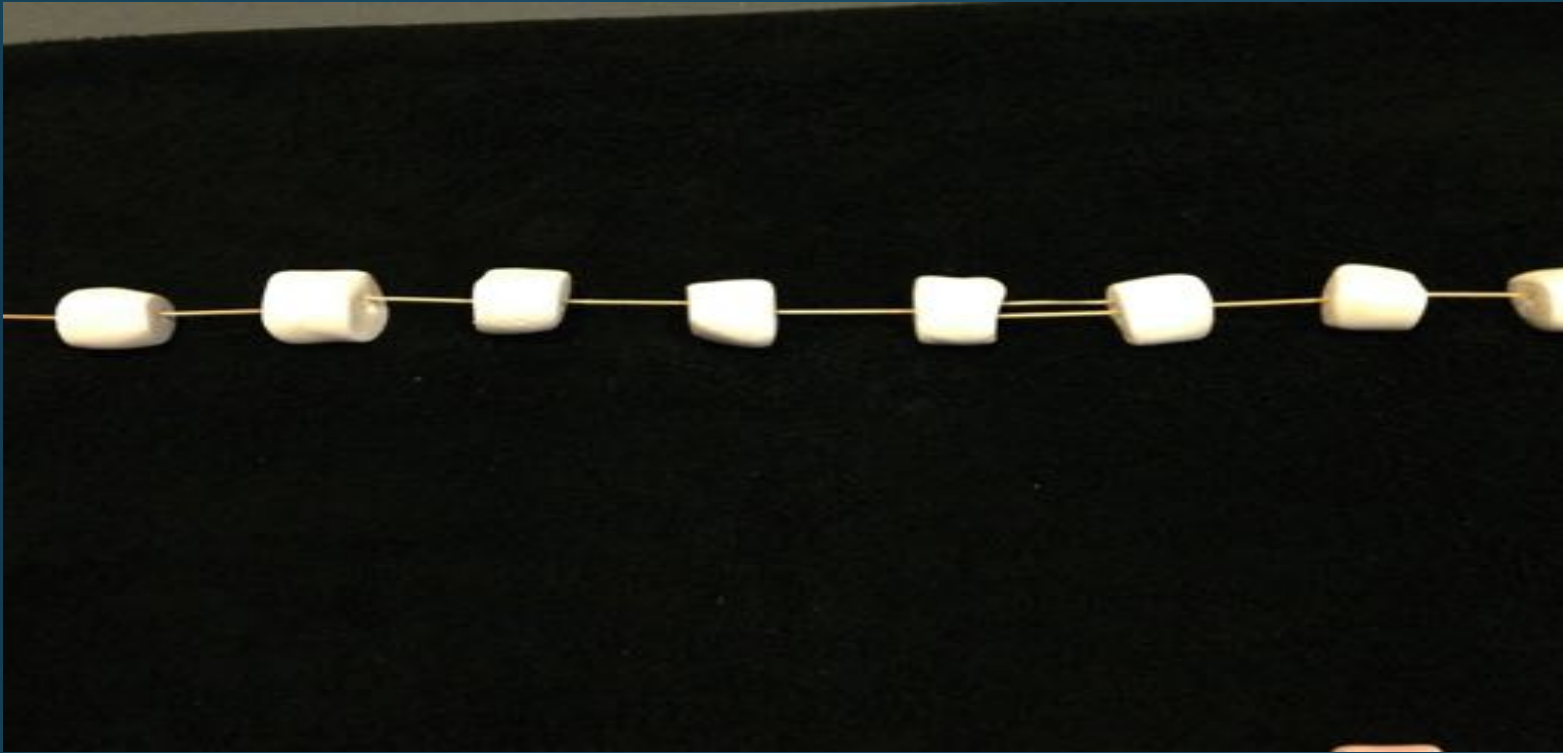


Won't this
work?

Vegetable oil is composed of mostly single bonds.



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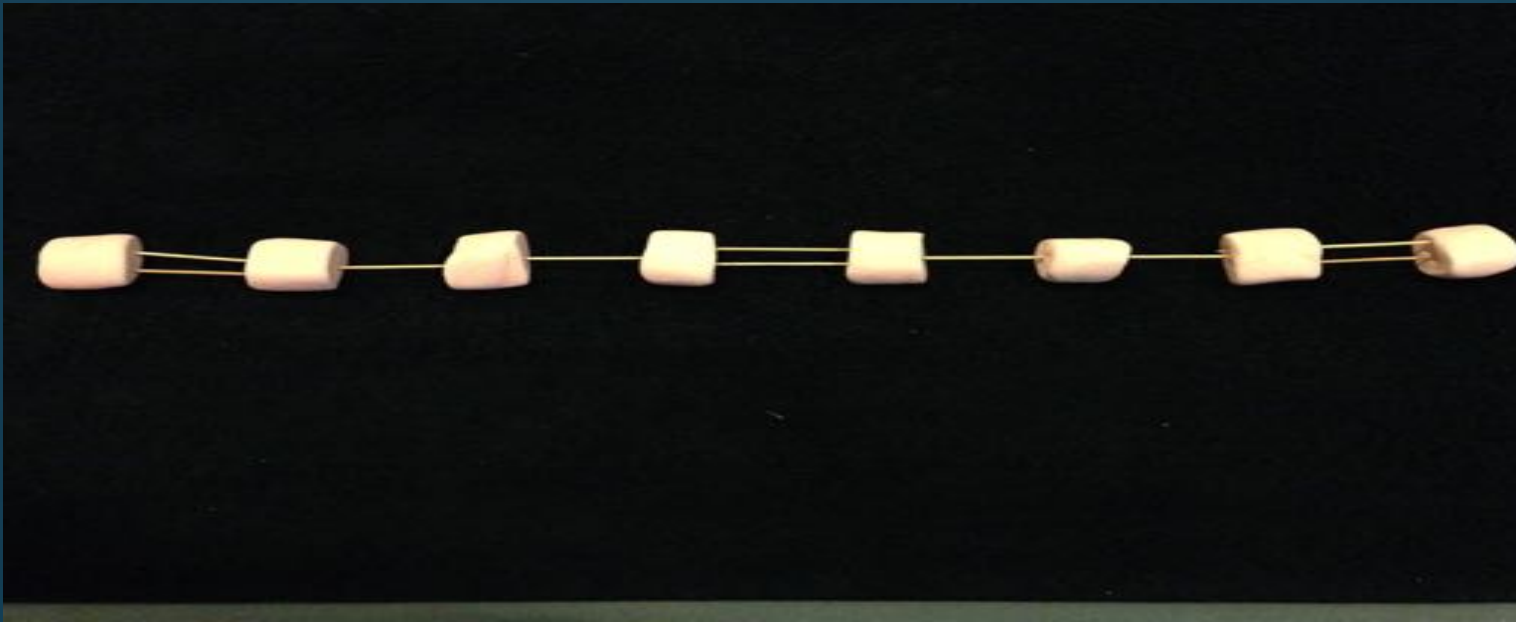
Vegetable Oil looks like this. It has carbon molecules (marshmallows) held together with mostly single bonds (toothpicks).

Vegetable Oil a weaker oil in brain tissue given the mostly single bonds (omega-6).

Fish Oil is composed of many double bonds



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Fish oil looks like this. The carbons (marshmallows) are held together by **double bonds** (toothpicks) every third carbon (omega 3).

There are six **double bonds** in the stronger **fish oil**.

“ Long ago, humans consumed
Vegetable oil to Fish oil in a 1:1 ratio

1



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1



Today, Vegetable oil to Fish oil
consumption can be a 50:1 ratio!!



Many brains are only fed **vegetable oil!!**

Thank you for free photos to www.all-free-download.com and www.wlwt.com

But the brain NEEDS fish oil.....

The brain is smart.

It will make brain tissue from the single bonded, vegetable oil.

This is likely a temporary measure while the brain waits for double bonded fish oil to arrive in the diet.

While the Vegetable Oil Brain may
LOOK the same, it does NOT WORK the same.

Vegetable oil structures FALL APART and
make the brain JITTERY.



The Fish Oil Brain is STRONGER.
Omega-3 double bonds allow for PROPER
FUNCTION and INJURY RESILIENCE.

Why does this matter?

A real brain has the consistency of soft cheese. It can be cut with a spatula.





Inside a real brain are neurons. They look a lot like spaghetti. Neurons connect with each other to help the brain communicate within the body.

https://www.tablespoon.com%25252Frecipes%25252Fshrimp-caught-in-spaghetti-nets%25252Ff2e3a425-f430-4849-b4fe-152e8d03a7f5&source=iu&pf=m&fir=VIIhTRDspRrBOM%253A%252C8ZSej8QvIkWrM%252C_&usg=__Fpl3enOduPRUmez4b83atkWdYo%3D&ved=oahUKEwiK9LCp6_PNAhVJ3mMKHe4QBnwQyjcINw&ei=A_yHV8rmHcm8jwPuoZjgBw



The brain neurons function a lot like the man-made Freeway System only neurons are *faster* and *smarter*.

Free Photo compliments of the California Historical Society

Brain neurons are high speed communication pathways, like freeways and Olympic ski runs!!



Skiers travel fast, when the ski run is *slippery, wide open, and clear.*

The same is true for brain *neurons*. When they are properly constructed and disease free, nerves can transmit up to *250mph!!*





If potholes exist, fast travel on freeways becomes more difficult.



Fast travel slows down on brain neurons
when they are damaged or built with the wrong oils.



What happens during injury of the vegetable oil brain?

- Frequently, concussion will occur.
- Normally the brain floats in cerebral spinal fluid within the boney cranium.
- A concussion is when the brain sloshes from side to side typically hitting one side or sometimes both sides of the boney cranium, squishing the brain tissue and neurons.

Concussion is Injuring our Students:

- Traumatic Brain Injuries are the leading cause of death/disability worldwide. Costs are in the billions.
- Trauma is the leading cause of death for persons under age 44. Females are more susceptible than recognized.
- High concussion sports include football, wrestling, soccer, lacrosse, hockey, boxing and cheerleading. A professional football player receives an estimated “900 to 1500 blows to the head during a season” (concussion.treatment.com)
- Concussion affects sleeping, thinking, studying, concentration, mood, memory, attention, coordination, headache, and nausea.

Often, the injury is more apparent later:



Dementia

Alzheimer's Disease

Parkinson's Disease

Chronic Traumatic
Encephalopathy

Tremor

Depression

Suicide

The **double bonded fish oil** structure withstands injury better than the **single bonded vegetable oil** structure.



Can we improve
nutritional brain protection
with fish and fish oil
consumption??

How ??

- * Eat Fish

- * Take Fish Oil

- * Eat Grass Fed Meat

Fish Oil Contains
both DHA and EPA,
omega – 3s.

DHA is most helpful
to the brain.



Researchers recommend:
500mg – 1000mg (1 gram) per day of DHA + EPA

www.brainhealtheducation.org/resources/advances-in-tbi-management/



Researchers find that
1-4 grams per day of DHA + EPA
are therapeutic

www.brainhealtheducation.org/resources/advances-in-tbi-management/





But, don't we have
enough nutrients
in our diets??



Thank you for free photo to www.123rf.com , pixabay.com,
and sweetclipart.com

Let's
Find
Out!!



In the Spring of 2013, approximately 100 athletes were surveyed at a small high school in Temecula, CA using a food frequency questionnaire. Students were asked about the consumption of foods containing fish oil (DHA), amino acids and the vitamin B complex vitamins.

Brain Food Survey Results:

<https://brainfoodbrainfood.com/category/concussion-tbi-therapy-dietary-survey/>

Nutrient	Survey	RDA	LOW INTAKE FOUND with:
• Omega 3 (DHA+EPA)	.67 g	.9 g	*Omega 3 fatty acids
• Amino Acids (protein)	57.5 g	46-52 g	
• Vitamin B1	.65mg	1-1.2mg	*Vitamin B1 (Thiamin)
• Vitamin B2	1.6mg	1-1.3mg	
• Vitamin B3	14.2mg	14-16mg	*Vitamin B5 (Pantothenic Acid)
• Vitamin B5	3.4mg	5.0mg	
• Vitamin B6	1.6mg	1.2-1.3mg	*Vitamin B9 (Folate)
• Vitamin B9	313mg	400mg	
• Vitamin B12	4.7ug	2.4ug	

How much fish/fish oil do we need?



“Experts recommend 500–1000 mg (1 gram) EPA+**DHA** per day to avoid deficiency.”

“Therapeutic doses of EPA+**DHA** range from 1 to 4 grams.”

www.brainhealtheducation.org/resources/advances-in-tbi-management/

Where do we find DHA??

- GRASS FED BEEF
- MILK can have DHA added
- Fish Oil has DHA
- Fish has DHA



Grass fed cattle make DHA



Thank you to www.pixabay.com
For the free photos



Grain feeding cattle loses DHA



DHA could be

added to

school lunch milk

(32 mg/cup)

Fish Oil has DHA and EPA, and
can be taken as a supplement



Some fish oil is molecularly distilled to remove mercury and impurities



Information on the Nordic Natural fish oil manufacturing process and triglyceride form.

<https://www.nordicnaturals.com/images/supportMaterials/PDFs/DistillingFactso311low.pdf>



DHA is found in most FISH:



4 ounces of white albacore tuna
contains 600mg of DHA

2 ounces of salmon
contains 700mg of DHA

The 2005 UDSA omega-3 DHA FISH analyses:

http://health.gov/dietaryguidelines/dga2005/report/HTML/table_g2_adda2.htm

High DHA - grams per 100mg (3.5oz)

- Atlantic Salmon, farmed 1.457
- Atlantic Salmon, wild 1.429
- Pollock .451
- Sea Bass .556
- Swordfish .681
- Trout .671
- White Tuna, canned water .629

Low DHA - grams per 100mg (3.5oz)

- Pink Tuna, canned .2222
- Catfish .128
- Atlantic Cod .154
- Shrimp .144
- Alaskan Crab .118
- Cod .16
- Orange Roughy 0
- Flounder/Sole .25

Cost for Entrees

- Beef Hamburger .82
- Chicken Nuggets .79
- Bean/Cheese Burrito .80
- Chicken Thigh Strips .48
- Burrito Bowl 1.30
- Wheat Pizza .60
- Gluten Free Pizza 1.92

- (Approximate costs)

Cost for FISH

- Grilled Trout - ClearSprings
- Grilled Salmon - Trident
- Albacore Tuna
- Two ounce serving cost range is \$.85 - \$1.00

Students *LIKE* Fish !!

In Spring of 2016, a survey was conducted in an athletics-oriented high school in Murrieta, CA. The classroom received a brief presentation comparing vegetable oil with fish oil marshmallow structures. Then students completed an anonymous, written survey:

76% of students answered that 'YES' they like fish

16% of students indicated that 'MAYBE' they like fish

Only 8% of students indicated they don't like fish

80% would try a TUNA FISH SANDWICH or FISH TACO

60% of students would try a TUNA SALAD



Did *you* know ??



That Child Nutrition
Directors work in
90,000
Schools and Institutions.

<https://schoolnutrition.org/AboutSchoolMeals/SchoolMealTrendsStats/>

That School Nutrition Programs

Serve 41 Million Lunches/ Breakfasts Daily



That 56% of all school children are fed
by School Nutrition Programs

For 13 years of their life!!

<http://www.fns.usda.gov/sites/default/files/SNDA-FoodServ-Pt4.pdf>

If schools served more fish?



Could we reduce the national concussion rate?

This could be a *FUN*

and

DELICIOUS Wellness Project!!



Tuna Sandwich Recipe

Tuna, onions, celery, sweet pickle relish, dressing, eggs, dry mustard and bread.

http://www.theicn.org/USDA_recipes/school_recipes/F-o8.pdf

Tuna and Noodles Recipe



Noodles, tuna, butter, celery, onions, milk, chicken stock, lemon juice, parsley, pepper.

http://www.theicn.org/USDA_recipes/school_recipes/D-37.pdf

Fiesta Wrap Recipe with Salmon



Add Salmon to quinoa, cheddar cheese, carrots, black beans, red bell peppers, red onions, chili powder, lime juice, curcumin, salt, wheat free-corn tortillas- recommended.

http://www.theicn.org/USDA_recipes/school_recipes/F-14rSchool.pdf

Mexicali Taco Boat with Fish



Add Fish to chili powder, onion powder, red pepper, black pepper, curcumin, garlic powder, salsa, sweet potato fries

http://www.theicn.org/USDA_recipes/New/Schools/Mexicali_Taco_Boat_50-100-RECIPE.pdf

Fajitas made with Fish



Add Fish to corn, onions, salsa, tomatoes, green peppers, curcumin, oregano, chili powder, garlic, pepper, sugar, white vinegar, cornstarch, vegetable oil

http://www.theicn.org/USDA_recipes/school_recipes/D-40.pdf

Baked

Cajun

Fish



Fish, lemon juice, butter, paprika, onion, red pepper, black pepper, oregano, thyme

http://www.theicn.org/USDA_recipes/school_recipes/D-46.pdf



Grilled

Fish Tacos

Fish, chili powder, adobo and sazón seasoning, red bell pepper, onion, jalapeño pepper, cilantro, lemon juice

<https://www.whatscooking.fns.usda.gov/recipes/myplate-cnpp/grilled-fish-tacos-peach-salsa>

Baked

Fish

Scandía



Fish, yogurt, cheddar cheese, pepper, parsley, lemon juice, hot pepper sauce, vegetable oil

http://www.theicn.org/USDA_recipes/school_recipes/D-47.pdf

Aztec Grain Salad with Fish Added



Recommend using nutritious brown rice, onions, mild green chiles, onions, jalapeno chiles, garlic, yogurt, milk, monterey/cheddar cheese, pinto beans, tomatoes, then add fish!

http://www.theicn.org/USDA_recipes/school_recipes/D-48.pdf

Will you need

a school fish vendor?

Clear Springs:

ClearSprings specializes in Trout, but they also have Mahi, and Swai. <http://www.clearsprings.com/company/>

Clear Springs' new products coat fish with ancient grains, potato, and tortillas to provide wheat gluten free options.

Clear Springs new products at <http://www.clearsprings.com/foodservice/products/new/>.

General kitchen recipes are found at <http://freshfishkitchen.com>

Trident Seafood:

Trident Seafood specializes in Salmon, but they also have Cod, Pollock, Talapia, Flounder, and Mahi.

<http://www.tridentseafoods.com/Products/Detail?pid=8534f61e-d09c-4fec-895f-8246bfd774ea>

- Their Fiesta Salmon Bites and Salmon Burgers look delicious.
Browse their products at:
<http://www.tridentseafoods.com/Products/Browse>
- They have general recipes at:
<http://www.tridentseafoods.com/Recipes>

Highliner Foods sells High Liner, Fisher Boy, Mirabel, Sea Cuisine, and C. Wirthy labels and products under High Liner, Icelandic Seafood and FPI labels.

<http://www.highlinerfoods.com/en/home/default.aspx>

Neptune Foods sells Pollock, Salmon, Swordfish, Mahi Mahi, Halibut, Tuna. <http://www.neptunefoods.com/>

Fish King Seafood: <http://www.fishkingseafood.com>

King and Prince Seafood: <http://www.kpseafood.com>

Slade Gorton:

- Slade Gorton sells pollock, tilapia, salmon, cod, sole and swai from IcyBay, GourmetBay and Sonoma Seafoods. <http://sladegorton.com>.
- They also have wheat gluten free options:
<http://sladegorton.com/food-service/gluten-free-foods>



Can School Nutrition,

Level the Concussion Playing Field??

We would like

to find out!!



A Special Thank You to the Bear Valley, Murrieta Valley and Yucaipa-Calimesa Unified School Districts for their encouragement, advice, and the nutrition internships they generously offer. Thank you to Photographer Posse for this beautiful photo of the Jordanelle Reservoir, Gold Star Foods, and ClearSprings Foods.

Jesus fed the masses with only 5 loaves of bread and 2 fish.

He uses ordinary people to accomplish the extraordinary!!

