

Daily Nutrient Intake of NCAA Division III Athletes

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Today's Presentation

- Dietary status of NCAA Division III athletes
- Nutrition education at the NCAA Division III level
- Environmental factors affecting dietary habits at NCAA Division III level

Why NCAA Division III?

- NCAA Division III athletes far outnumber other division's participants
- Most studies investigate D I or D II athletes
- Limited information

	Division I				Division II	Division III	Total
	I-FBS	I-FCS	I	Total			
Active	119	116	91	326	281	420	1,027
Provisional	0	0	1	1	15	21	37
Voting Conference	11	10	10	31	22	43	96
Nonvoting Conference	0	3	18	21	1	13	35
Corresponding							15
Affiliated							72
TOTAL							1,282

Daily Nutrient Intake of NCAA Division III Athletes

- Springfield College
 - 26 varsity sports
 - 826 student athletes (36% of student population)
 - 10 junior varsity sports

Daily Nutrient Intake of NCAA Division III Athletes

- 64 NCAA Division III athletes
 - 30 female (19.6±1.2 yrs)
 - 34 male (20.1±0.7 yrs)
- All athletes took part in session with registered dietitian
 - Food models
 - Explanation of 3 day diet records
- Three day diet records

Daily Nutrient Intake of NCAA Division III Athletes

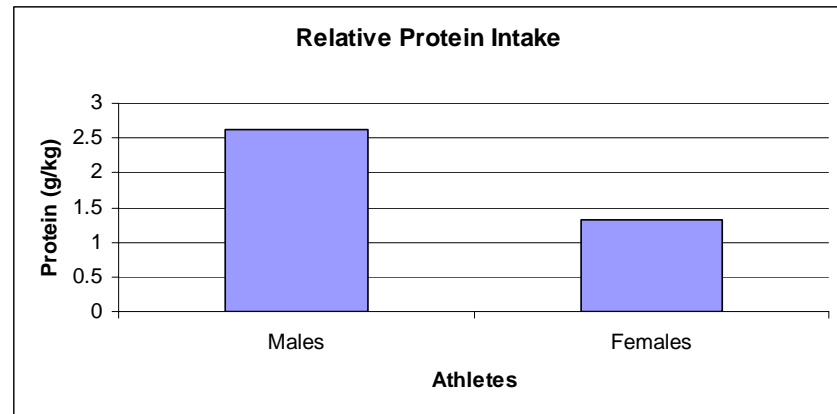
- Protein

- Represented 25.6 % of male athlete's diets

- 2.63 ± 0.66 g/kg

- Represented 14.9% of female athlete's diets

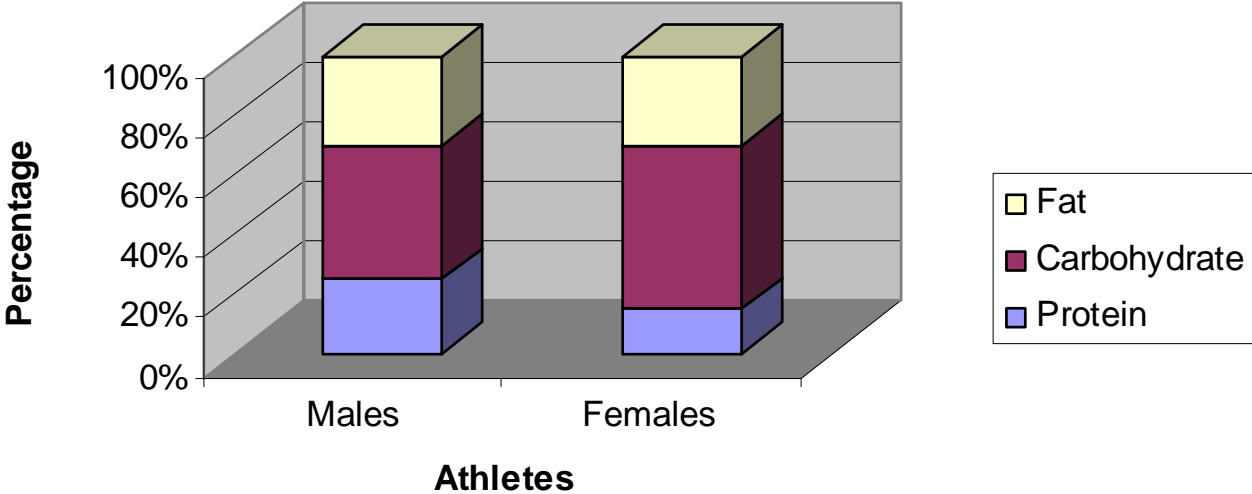
- 1.32 ± 0.23 g/kg



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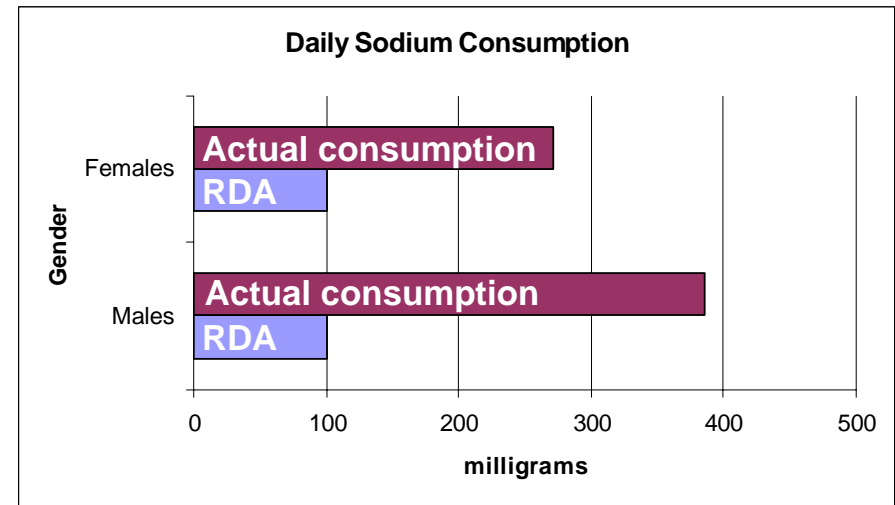
- Carbohydrate
 - Represented $45 \pm 7.3\%$ of male athlete's diets
 - 4.78 ± 0.98 g/kg
 - Represented $55 \pm 7.2\%$ of female athlete's diets
 - 5.05 ± 1.42 g/kg
- Fat
 - Represented $27 \pm 7.5\%$ of male athlete's diets
 - Represented $29 \pm 6.5\%$ of female athlete's diets

Composition of Diet



Daily Nutrient Intake of NCAA Division III Athletes

- Micronutrients
 - Sodium
 - Males = 385% of RDA
 - Females = 271% of RDA
 - Potassium
 - Males = 91% of RDA
 - Females = 41% of RDA



Comparison to NCAA Division I

- Hinton, et. al. (345 Division I athletes)
 - 15% of athletes consuming adequate CHO
 - 26% of athletes consuming adequate PRO
 - Males exceeded guidelines:
 - Fat, saturated fat, cholesterol, sodium
 - Females
 - 62% wanted to lose weight

Comparison to NCAA Division I

- Cole, et. al (28 Division I football players)
 - No differences in dietary practices when compared to general public via NHANES III
 - Inadequate energy intake for activity level.

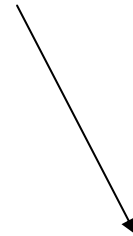
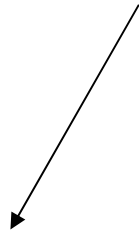
Nutrient	Measure	Average 16–29 NHANES III	Average this study from diet records <i>n</i> = 28	Provided from beverage	Intake diet record and beverage	<i>SD</i>	Comparison over/under NHANES III
Energy	kcal	3,061	2,624†	664	3,288†	92	227
Carbohydrate	gram	367	299†	93	392	15	25
Protein	gram	111	129†	40	169†	5	58
OH	gram	18	0	0	0	0	–18
Fat	gram	118	89†	14	103†	4	–15
Saturated fat	gram	43	33	4	37		–7
MUFA	gram	45	25	5	28		–17
PUFA	gram	23	13	3	16		–9
Cholesterol	mg	355	333	1	399		14
% from carbohydrate		48	47	57	53		
% from protein		14	22	23	22		
% from OH		4	0	0	0		
% from total fat		35	24	20	23		
% from saturated fat		12	11	5	10		
% from MUFA		13	9	4	8		
% from PUFA		7	4	4	4		

* Adapted from Centers for Disease Control and Prevention (4). MUFA = monounsaturated fatty acids; PUFA = polyunsaturated fatty acids; OH = alcohol.
 † = significantly different (< 0.05).

Cole, et. al. Evaluation of dietary practices of national collegiate athletic association division I football players. *Journal of Strength and Conditioning Research*, 19(3), 2005.

Does Nutrition Education Help?

23 female varsity sport athletes



Control (8)

Experimental (15)

3 day diet record
“Pre” Nutrition Knowledge Survey
“Post” Nutrition Knowledge Survey
3 day diet record

3 day diet record
“Pre” Nutrition Knowledge Survey
6 week Nutrition Education Program*
“Post” Nutrition Knowledge Survey
3 day diet record

Nutrition Education Program consisted of six hour long sessions on topics such as appropriate macro and micro nutrient intakes, water consumption, nutrient timing, etc. These sessions were delivered by a professor with extensive knowledge of nutrition for athletes.

Results

- Groups significantly different prior to study in terms of nutrition knowledge
 - Were not different after study
- Nutrition Knowledge Score was significantly higher after education for experimental group
 - 9.6 ± 2.19 vs. 11.8 ± 2.04

Results

- Calcium intake increased post education
 - 762 ± 272 g vs. 1141 ± 140 g
- Sodium intake decreased post education
 - 4233 ± 944 g vs. 2904 ± 922 g
- Control group water intake decreased significantly from pre to post test
- Experimental group water intake increased significantly from pre to post test

Where do athletes get their nutrition information?

Influences	Responses		
	Very much	Somewhat	Not at all
<i>University of ZZZ</i>			
football team	19	2	13
Teammates	13	18	22
Friends	11	24	18
Coaches	8	21	24
Magazines	7	16	30
Favorite athlete	5	13	35
Parents	4	14	35
Gym or health club	4	13	36
Nutritionists	4	14	35
Physicians	0	9	44
Television or radio	3	10	40
Teachers	2	1	50

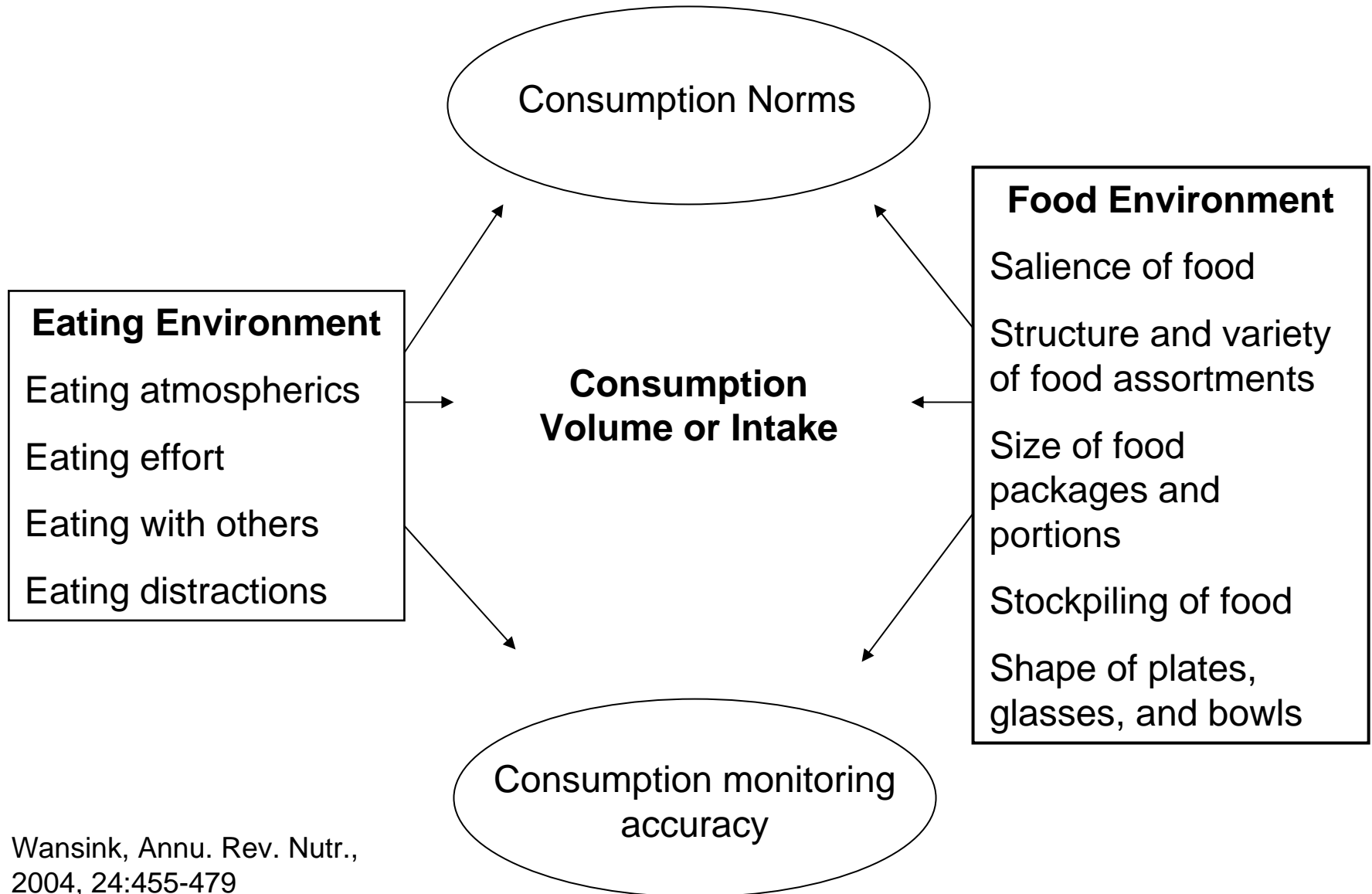
Swirzinski, et. al. A survey of sport nutrition supplements in high school football players. *Journal of Strength and Conditioning Research*, 14(4), 2000.

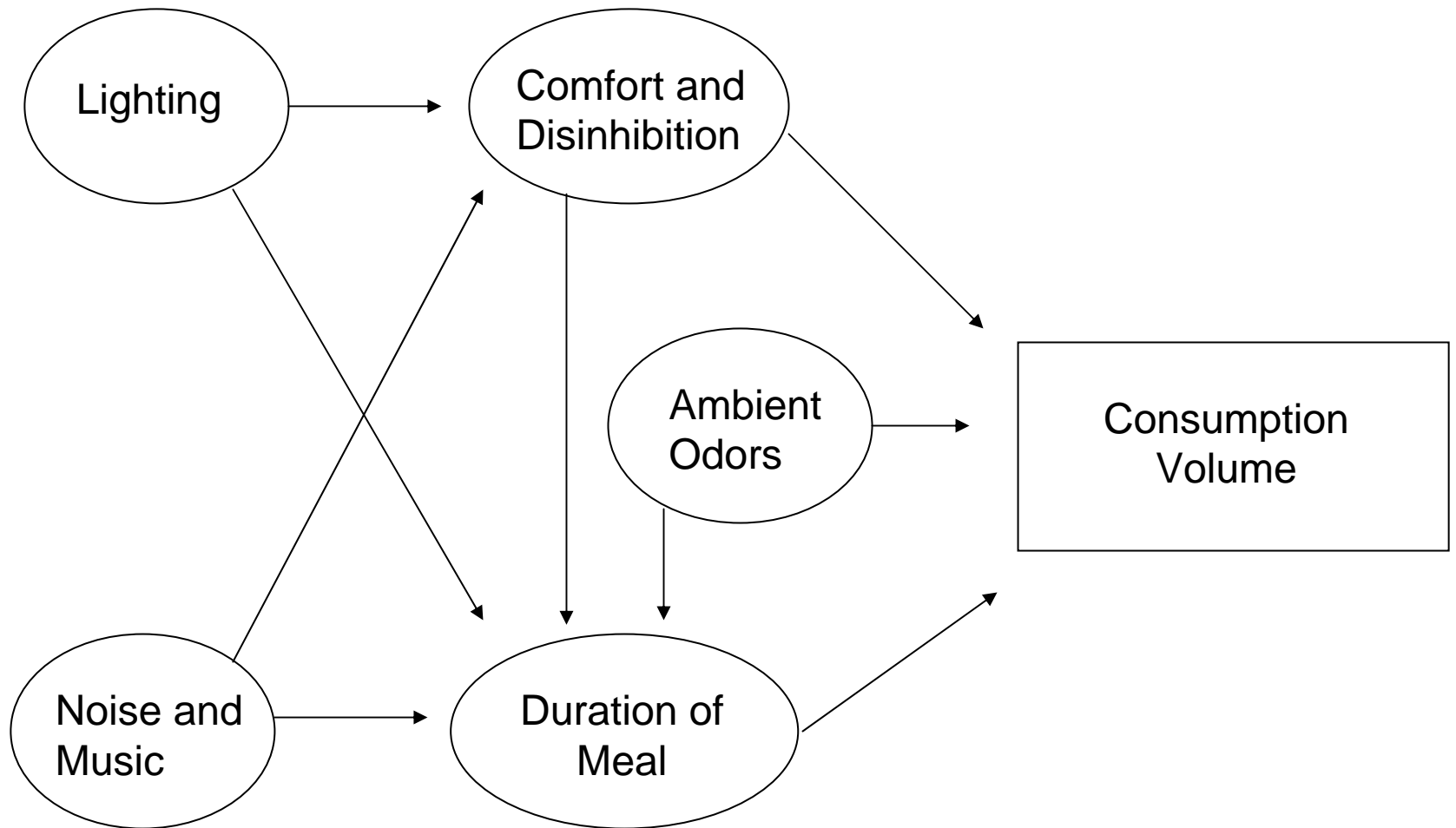
What Springfield College Students are Eating

- 400 cucumbers
- 440 pounds of tomatoes
- 1,000 bananas
- 540 pounds of cereal
- 640 heads of lettuce
- 920 gallons of milk
- 1,200 pounds of mashed potatoes
- 1,220 pounds of raw pasta
- 1,275 pounds of cheese
- 1,700 hamburgers
- 4,500 pieces of pizza
- 7,000 cookies
- 1,050 pounds of french fries
- 2,000 pounds of chicken
- 9,160 eggs
- 280 pounds of pork
- 600 pounds of beef

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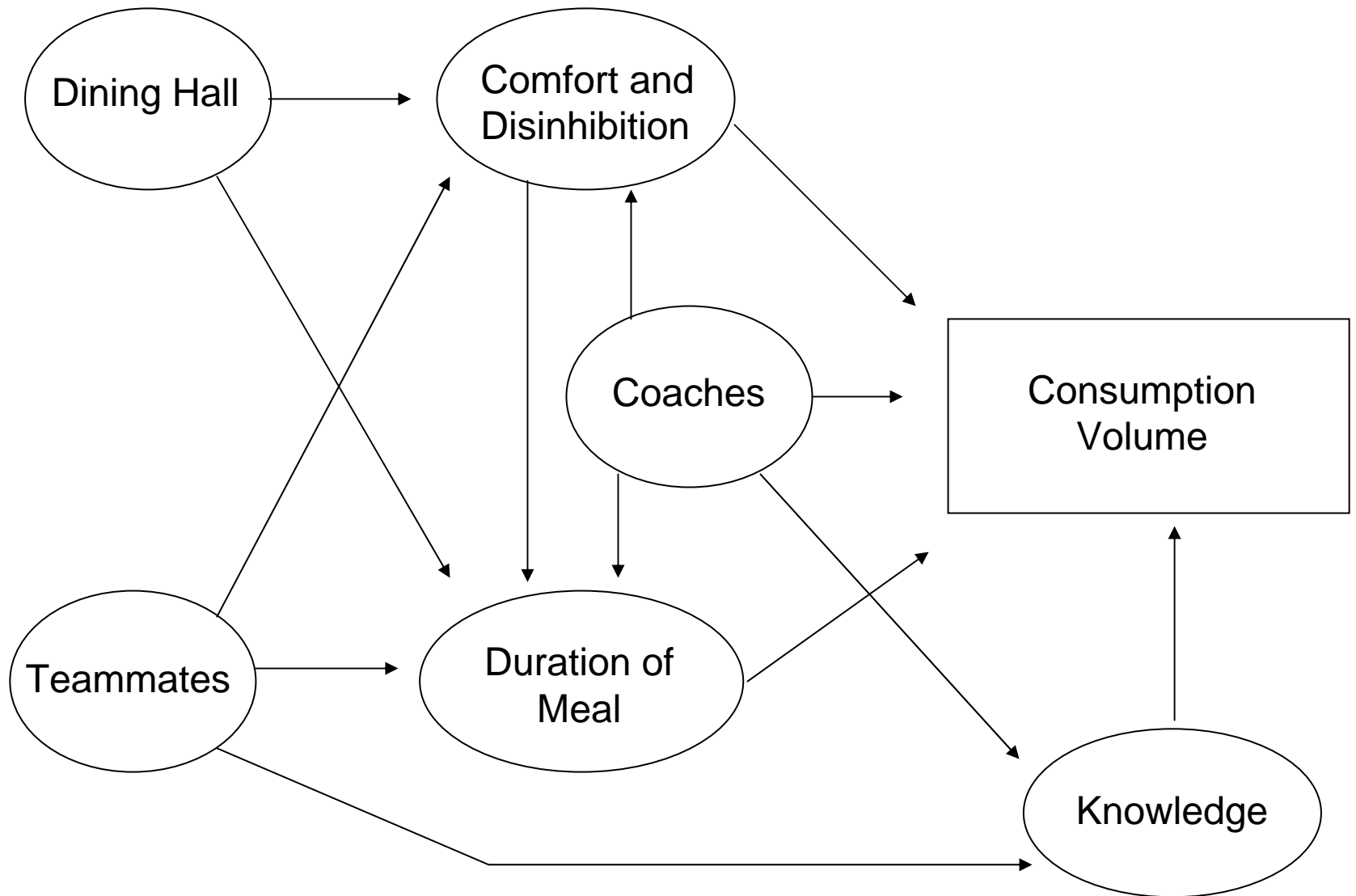
Eating and Food Environments



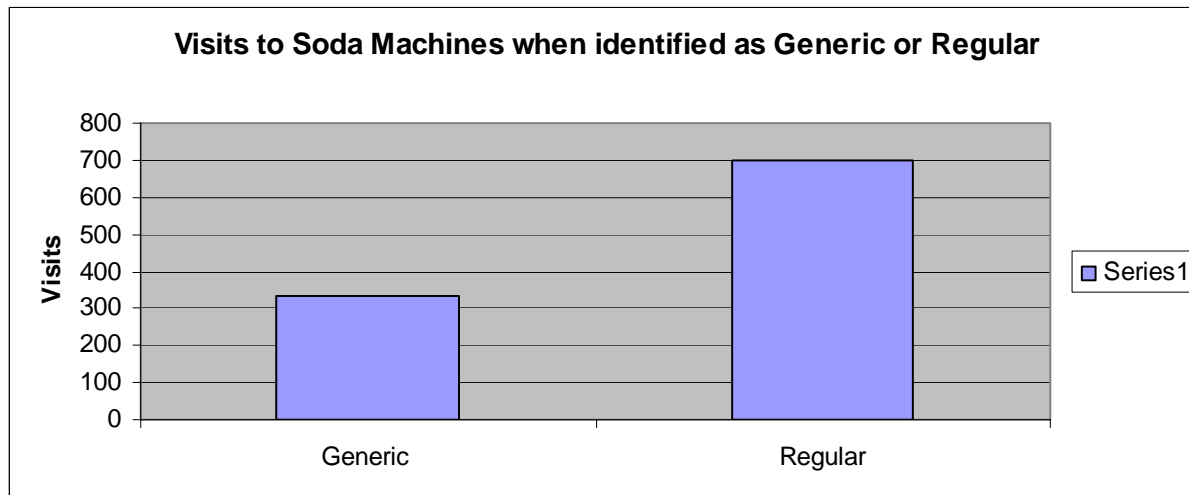
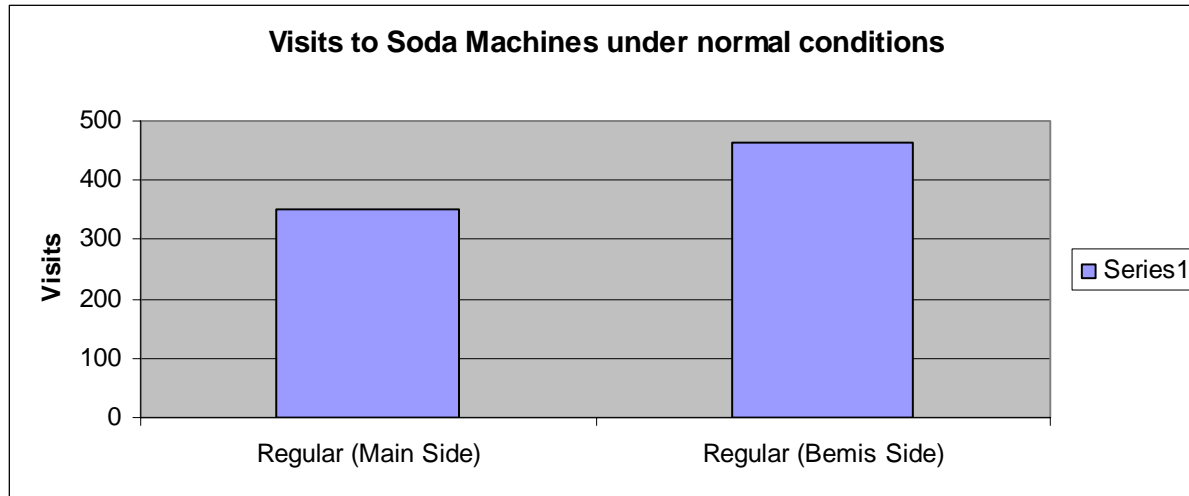


Eating and Food Environments of NCAA Division III Athletes

- Regular dining hall
 - Typically eat in large groups
 - Pleasant atmosphere
 - Minimal effort (food is all prepared, buffet style)
 - Numerous distractions
 - Incredible variety
 - Very salient
- No professional supervision/planning of meals
 - Go with what they know, what they are exposed to
- Limited involvement by team coaches
 - Rely on internet, magazines, hearsay



Can we change the environment?



What can we do?

- At the NCAA Division III level, in the absence of professional and consistent guidance for student-athletes, create an environment in which the student-athlete can optimize their nutrition without even knowing it.

Conclusions

- NCAA Division III athlete's diets are similar to others
- Education helps, to a point
- Environment is crucial