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INTRODUCTION

- The 2015-2020 Dietary Guidelines for Americans recommend adults consume 2 to 2.5 cup-equivalents of fruit daily; a ½ cup of dried fruit counts as 1 cup-equivalent.
- Dried fruits are convenient, shelf-stable forms of fruit that could help Americans increase fruit intake when access to fresh fruit is limited.
- Dried fruits are good sources of nutrients such as potassium and dietary fiber, as well as various phytochemicals including flavonoids and phenolic acids, that have been associated with cardiovascular health. However, the concentrated natural sugar content of dried fruits may deter people from consuming them.
- Increased brachial blood pressure is an established risk factor for cardiovascular disease (CVD).
- Central blood pressure (BP) reflects the blood pressure experienced by organs and is a stronger predictor of cardiovascular events compared to brachial BP.
- Stiffening of central arteries is predictive of CVD morbidity and mortality.

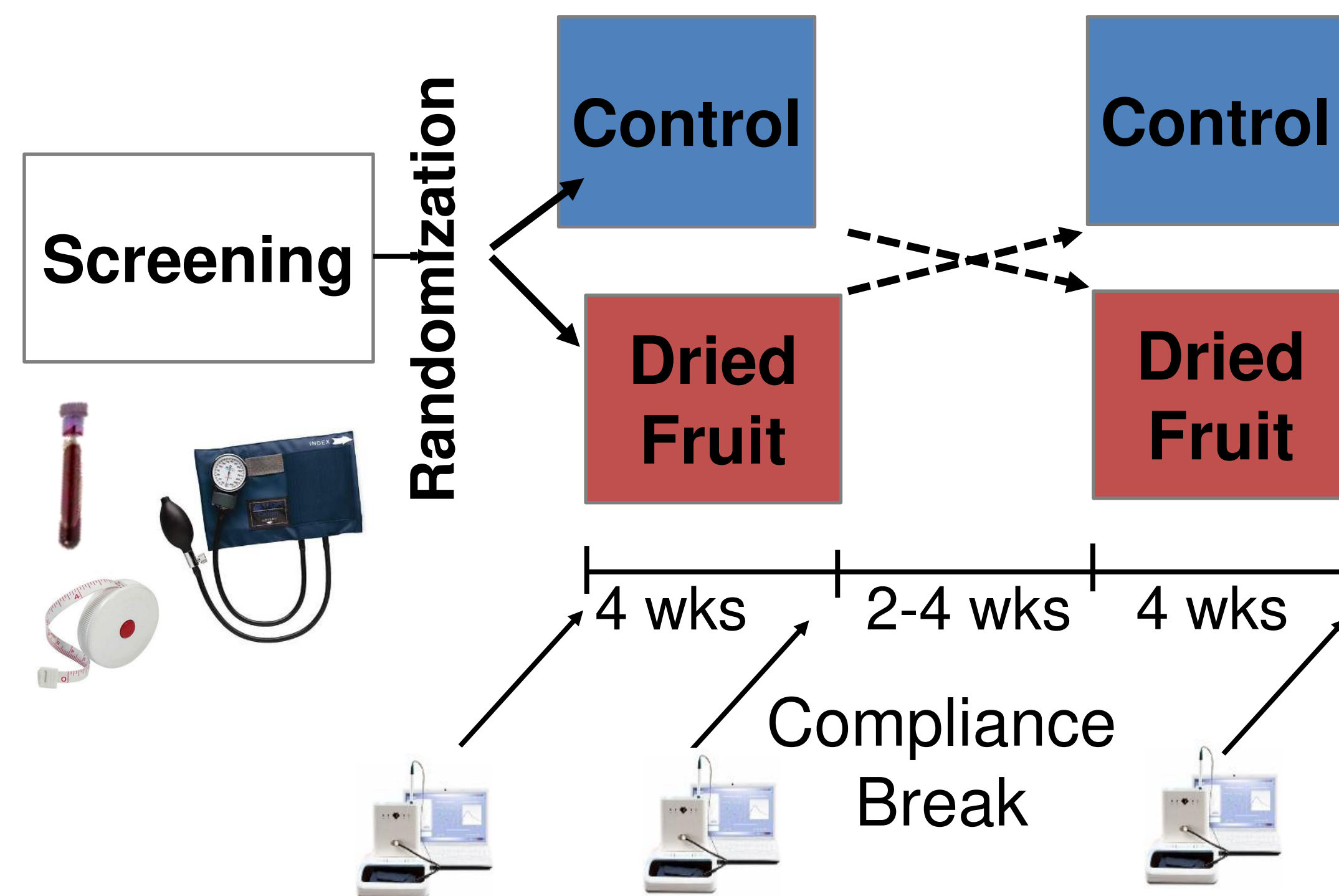
AIM & HYPOTHESIS

- To compare the effects of consuming ¼ cup of a blend of dried plums, figs, dates, and raisins with a calorie- and macronutrient-matched snack food (animal crackers and fruit gummies) on blood pressure and arterial health outcomes in adults representative of the U.S. population and at risk for cardiovascular disease
- Dried fruit consumption will improve blood pressure and measures of arterial stiffness compared to the control treatment and baseline

METHODS: STUDY DESIGN

Criteria for Enrollment:

- Age: 25-60 years
- BMI: 25-36 kg/m²
- At least one of the following:
 - Waist circumference ≥ 80 cm (women), ≥94 cm (men)
 - HDL-C <50 mg/dL (women), <40 mg/dL (men)
 - LDL-C >116 mg/dL
 - TG >150 and <350 mg/dL
 - Glucose ≥100 and <126 mg/dL
 - SBP 120-159 mmHg
 - DBP 80-99 mmHg
- Non-smokers
- Not taking blood pressure- or cholesterol-lowering medications



Vascular endpoints were assessed using the SphygmoCor XCEL device.

Figure 1. Randomized 2-period crossover trial study design.

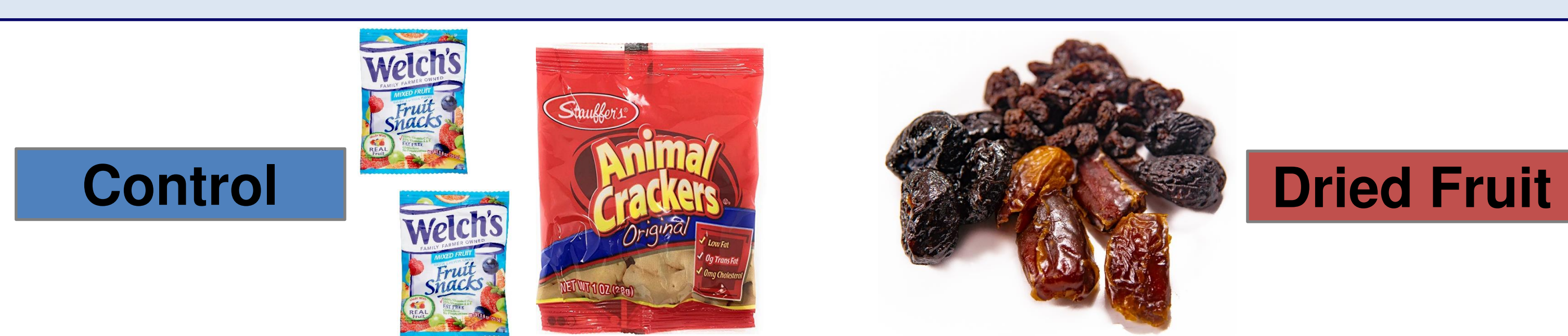
METHODS: NUTRIENT PROFILE OF TREATMENTS

Table 1. Nutrient profile of treatments

Nutrient	Control	Dried Fruits
Calories	330	300
Total fat, g	3	0.5
SFA, g	0	0
Sodium, mg	170	11
Carbohydrate, g	76	79
Fiber, g	1.5	8
Sugar, g	32	60
Protein, g	3	3

Source: USDA Food Composition Databases

Participants were advised to consume one serving of fresh fruit daily throughout both treatment periods and to incorporate treatments into their usual self-selected diets, substituting them for foods of equal caloric value.



RESULTS: BASELINE CHARACTERISTICS

Table 2. Characteristics of participants

	Women	Men	Total
n	26	29	55
Age, y	42±2	39±2	41±1
BMI, kg/m ²	28.5±0.6	28.5±0.5	28.5±0.4
TC, mg/dL	188±7	184±8	186±5
HDL-C, mg/dL	57±4	42±2	49±2
LDL-C, mg/dL	111±7	115±7	113±5
TC:HDL-C	3.5±0.2	4.6±0.3	4.1±0.2
non-HDL-C, mg/dL	131±8	143±8	137±6
Central systolic BP, mmHg	108±2	110±2	109±1
Central diastolic BP, mmHg	76±2	78±2	77±1
Central PP, mmHg	32±1	33±1	32±1
Central AP, mmHg	8±1	6±1	7±1
AI, %	24±2	12±3	18±2
PWV, m/s	6.3±0.2	6.6±0.1	6.5±0.1
Brachial systolic BP, mmHg	117±2	122±2	120±1
Brachial diastolic BP, mmHg	75±2	77±2	76±1

Mean values ± Standard Errors

RESULTS: BLOOD PRESSURE

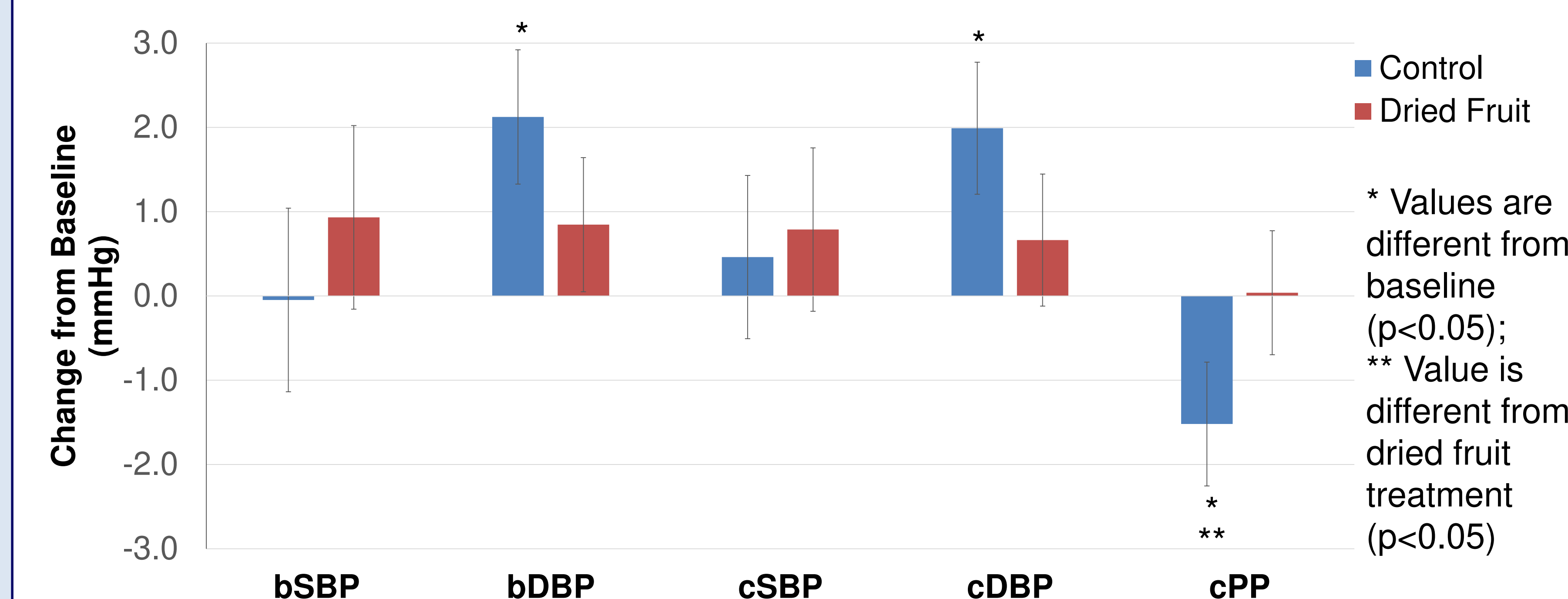


Figure 2. Effects of treatments on brachial systolic blood pressure (bSBP), brachial diastolic BP (bDBP), central systolic BP (cSBP), central diastolic BP (cDBP), and central pulse pressure (cPP). bDBP and cDBP increased after the control treatment, resulting in decreased cPP. Dried fruit consumption did not significantly change blood pressure.

RESULTS: ARTERIAL STIFFNESS

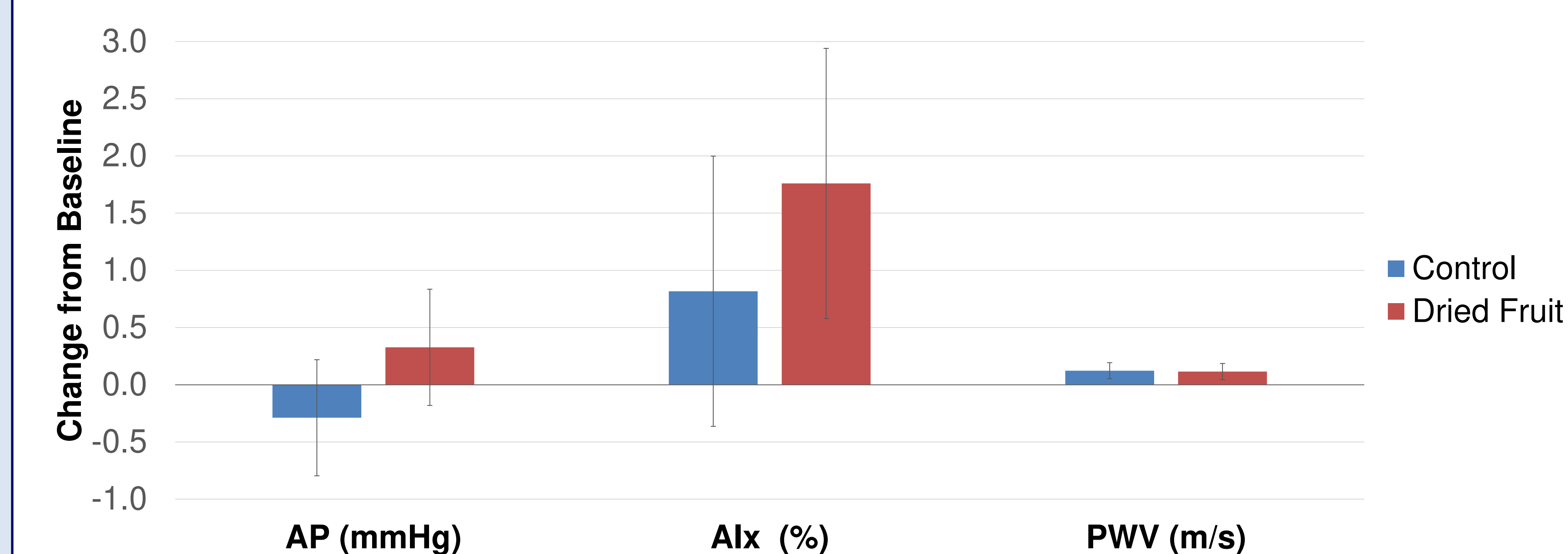


Figure 3. Effects of treatments on augmentation pressure (AP), augmentation index (Aix), and pulse wave velocity (PWV). Neither treatment significantly changed measures of arterial stiffness.

CONCLUSIONS & IMPLICATIONS

- Compared to a calorie- and macronutrient-matched snack, daily consumption of ¼ cup dried fruits for 4 weeks did not affect blood pressure or arterial stiffness
- Further research is needed to determine the dose and duration of consumption required to observe vascular benefits of dried fruit bioactives