Exercise and Lifestyle Modification in Atrial Fibrillation

Konrad J. Dias, PT, DPT, PhD

Board Certified Cardiovascular and Pulmonary Clinical Specialist, American Physical Therapy Association

Certified Exercise Expert for the Aging Adult, Academy of Geriatrics, APTA
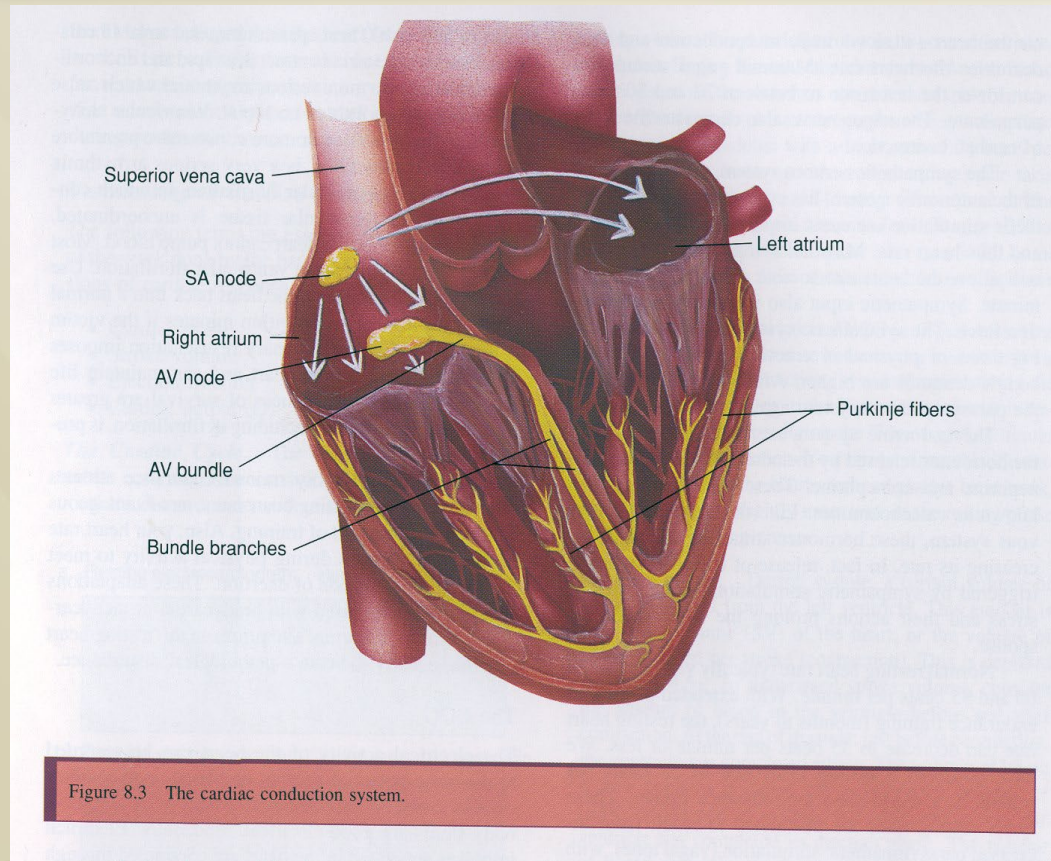
Professor, Department of Physical Therapy

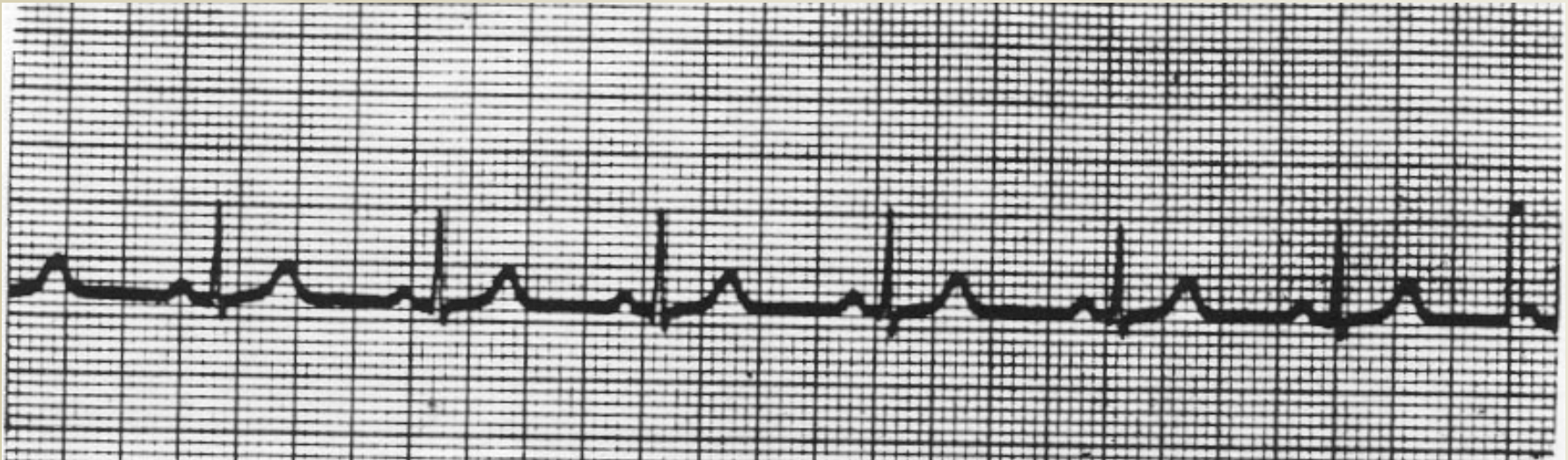California State University, Sacramento
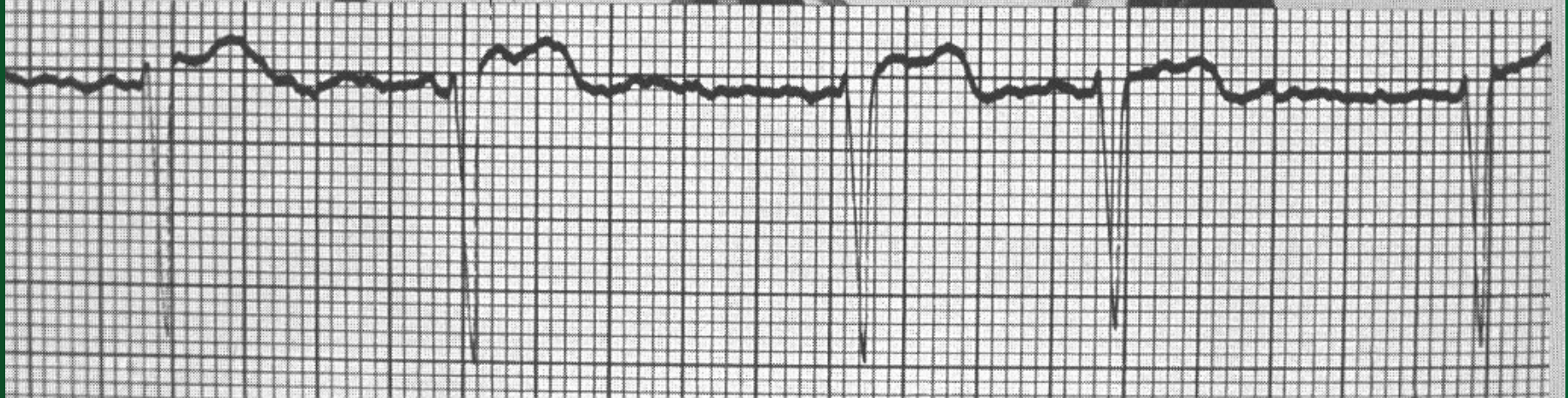
SACRAMENTO STATE
Redefine the Possible

Normal Electrical Conduction Pathway

Figure 8.3   The cardiac conduction system.

Normal Sinus Rhythm
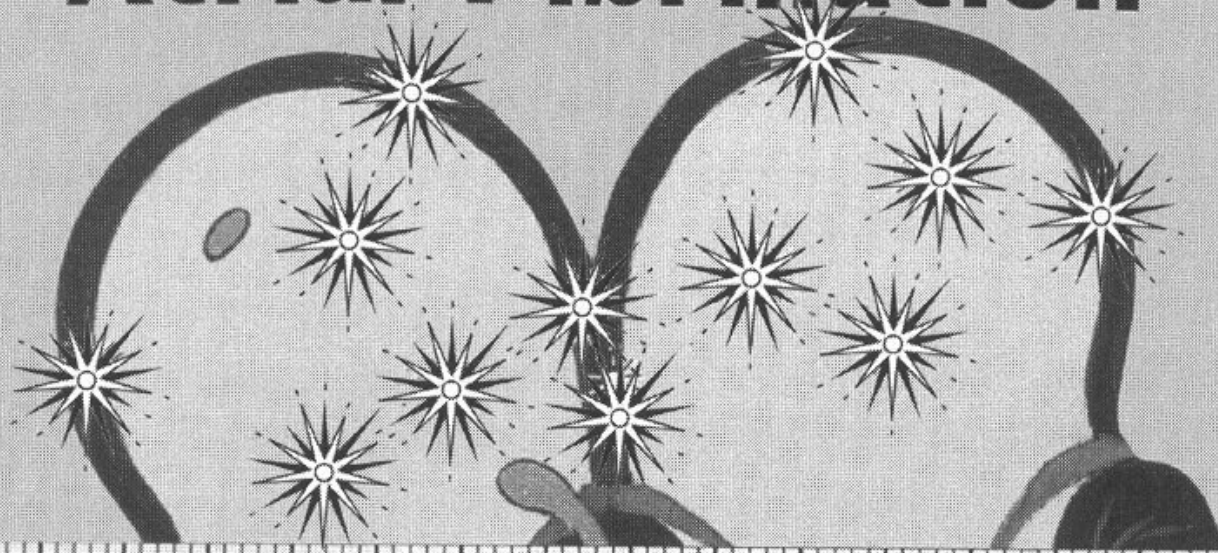
Atrial Fibrillation – Rate and Rhythm Control

- Controlled vs. uncontrolled atrial fibrillation
  - Atrial Kick
- Electrical and Pharmacological Cardioversion
- AF Catheter Ablation to Maintain Sinus Rhythm reasonable in symptomatic patients with heart failure and a reduced ejection fraction to reduce mortality and heart failure hospitalizations. (*AHA 2019 Guidelines*)

Anticoagulation in AF

Chadsvasc risk factors

RISK FACTORS	SCORE
Congestive heart failure	1
Hypertension	1
Age ≥ 75	2
Age 65-74	1
Diabetes mellitus	1
Stroke/TIA/thrombo-embolism	2
Vascular disease	1
Sex Female	1
Your score	0

	Condition	Points
C	Congestive heart failure	1
H	Hypertension > 140/90 mmHg or treated	1
A_2	Age ≥ 75 years	2
D	Diabetes Mellitus	1
S_2	Prior stroke or TIA	2
V	Vascular disease	1
A	Age 65 – 74 years	1
Sc	Sex category (female)	1

Mechanistic Contributors to Atrial Fibrillation
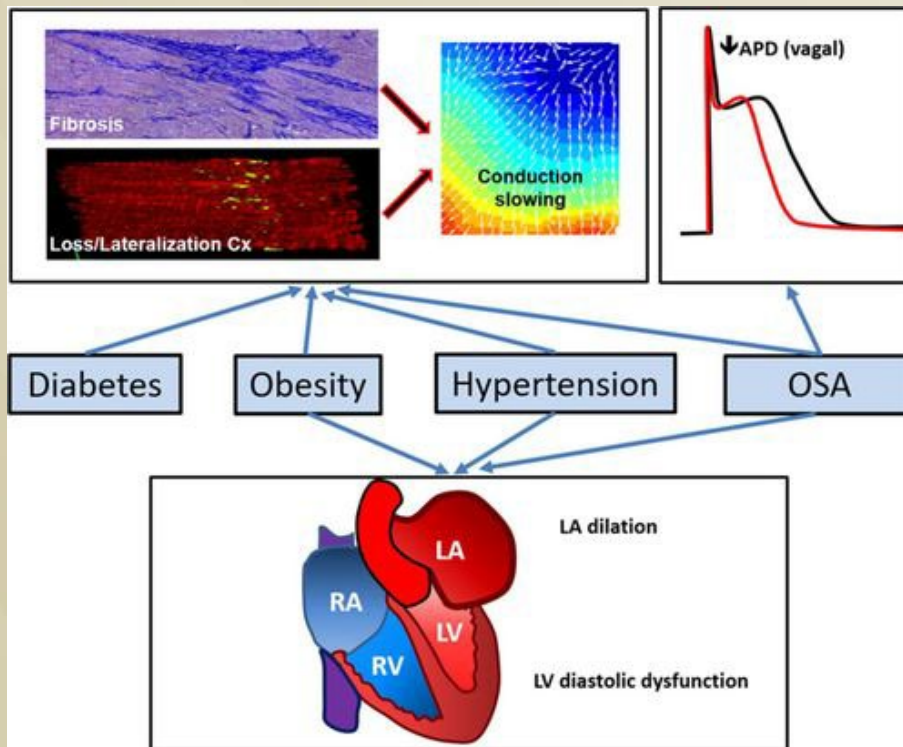
- mechanistic contributors documented to be caused by various risk factors and the relationship between the associated atrial remodeling and AF.

Effect of Weight Reduction and Cardiometabolic Risk Factor Management on Symptom Burden and Severity in Patients With Atrial Fibrillation
A Randomized Clinical Trial

OBJECTIVE To determine the effect of weight reduction and management of cardiometabolic risk factors on atrial fibrillation burden and cardiac structure.

DESIGN, SETTING, AND PATIENTS Single-center, partially blinded, randomized controlled study conducted between June 2010 and December 2011 in Adelaide, Australia, among overweight and obese ambulatory patients (N = 150) with symptomatic atrial fibrillation. Patients underwent a median of 15 months of follow-up.

INTERVENTIONS Patients were randomized to weight management (intervention) or general lifestyle advice (control). Both groups underwent intensive management of cardiometabolic risk factors.

RESULTS Of 248 patients screened, 150 were randomized (75 per group) and underwent follow-up. The intervention group showed a significantly greater reduction, compared with the control group, in weight (14.3 and 3.6 kg, respectively; $P < .001$) and in atrial fibrillation symptom burden scores (11.8 and 2.6 points, $P < .001$), symptom severity scores (8.4 and 1.7 points, $P < .001$), number of episodes (2.5 and no change, $P = .01$), and cumulative duration (692-minute decline and 419-minute increase, $P = .002$). Additionally, there was a reduction in interventricular septal thickness in the intervention and control groups (1.1 and 0.6 mm, $P = .02$) and left atrial area (3.5 and 1.9 cm^2, $P = .02$).

Long Term Effects of Goal Directed Weight Management in Atrial Fibrillation Cohort (LEGACY Trial)

- 355 were included in this analysis. Weight loss was categorized as group 1 (≥10%), group 2 (3% to 9%), and group 3 (<3%).

- AF burden and symptom severity decreased more in group 1 compared with groups 2 and 3 (p < 0.001 for all).

- Arrhythmia-free survival with and without rhythm control strategies was greatest in group 1 compared with groups 2 and 3 (p < 0.001 for both).

Time (Days)	0	365	730	1095	1460	1825
≥10 WL	135	101	72	42	31	18
3-9% WL	103	62	36	22	13	7
<3% WL or gain	117	66	44	22	11	9

	0	365	730	1095	1460	1825
	135	130	114	86	67	36
	103	93	83	57	35	22
	117	105	85	53	32	22
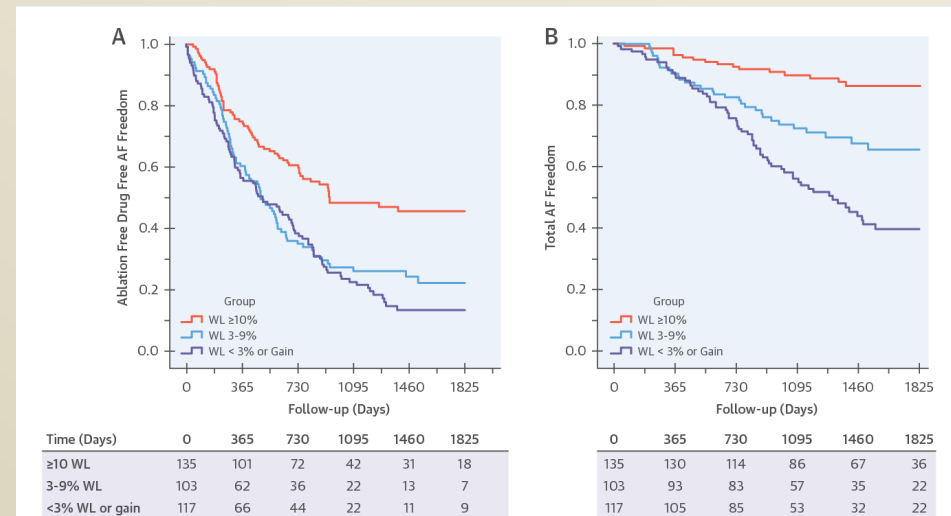
(A) Kaplan-Meier curve for AF-free survival without the use of rhythm control strategies. (B) Kaplan-Meier curve for AF-free survival for total AF-free survival (multiple

Risk Factor Modification Program

Aggressive Risk Factor Management

Weight Management and Exercise

Hyperlipidaemia

Obstructive Sleep Apnea

Hypertension

Diabetes

- Educate for permanent lifestyle change
- Diet Plan
- Initial target: >10% weight loss. Final target: BMI <27 kg/m^2
- Avoid weight fluctuation
- Exercise: 30 minutes for 3-4x per week
- Increase type and duration of activity up to 250 minutes per week

- Initial lifestyle measures
- At 3 months: start statins if LDL >100 mg/dl
- Add fibrates if TG >200 mg/dl
- Start fibrates if TG >500 mg/dl

- Overnight sleep study
- CPAP if AHI ≥30; or ≥20/h with resistant HT or daytime somnolence
- Check adherence: regular CPAP machine data download

- Home BP diary: 2-3 x daily
- Reduce salt
- Start ACEI or ARB
- Target: <130/80 mmHg (at rest) & <200/100 mmHg (at peak exercise)

- Glucose tolerance test
- Lifestyle measures
- At 3 months: Metformin if HbA1c >6.5%
- Diabetes clinic

Smoking Cessation & Alcohol Abstinence (or reduction to 30g per week)

Lau DH, Nattel S, Kalman JM, Sanders P. Modifiable Risk Factors and Atrial Fibrillation. *Circulation*. 2017;136(6):583-596. doi:10.1161/CIRCULATIONAHA.116.023163

SACRAMENTO STATE
Redefine the Possible