Saturday, December 7th, 2024

Hill's®
Transforming Lives™

Small Animal Clinical Nutrition Symposium

AGING CATS & DOGS

AGENDA

Saturday
Dec. 7th
2024

7:30am — 8:30am	Registration
8:30am — 8:35am	Welcome
8:45am — 9:25am	Managing Common Senior Dog Health Conditions & Comorbidities with Nutrition Camille Torres-Henderson, DVM, DABVP, DACVIM (Nutrition)
9:35am — 10:25am	Managing Common Senior Cat Health Conditions & Comorbidities with Nutrition Camille Torres-Henderson, DVM, DABVP, DACVIM (Nutrition)
10:25am — 10:40am	Break
10:40am — 11:30am	Senior Pet Diets Camille Torres-Henderson, DVM, DABVP, DACVIM (Nutrition)
11:30am — 12:00pm	Morning Session Q&A Camille Torres-Henderson, DVM, DABVP, DACVIM (Nutrition)
12:00pm — 1:00pm	Lunch
1:00pm — 1:30pm	Weighty Matters: Tackling Canine & Feline Obesity In Senior Pets - Insights from the Healthy Weight Clinic & Pet Health Center Katherine Oakes, DVM
1:30pm — 2:20pm	Canine Cognitive Dysfunction Susan Nelson, DVM
2:20pm — 2:40pm	Break
2:40pm — 3:30pm	Nutrition Tips and Tricks for the Senior Patient: Diets and Esophageal Feeding Tubes Ally Sptiz, DVM, (Residency Trained in Small Animal Clinical Nutrition))
3:30pm — 4:00pm	Afternoon Session Q&A

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Weighty Matters: Tackling Canine and Feline Obesity In Senior Pets – Insights from the Healthy Weight Clinic and Pet Health Center

KATHERINE OAKES, DVM

WEIGHTY MATTERS: TACKLING CANINE & FELINE OBESITY IN SENIOR PETS

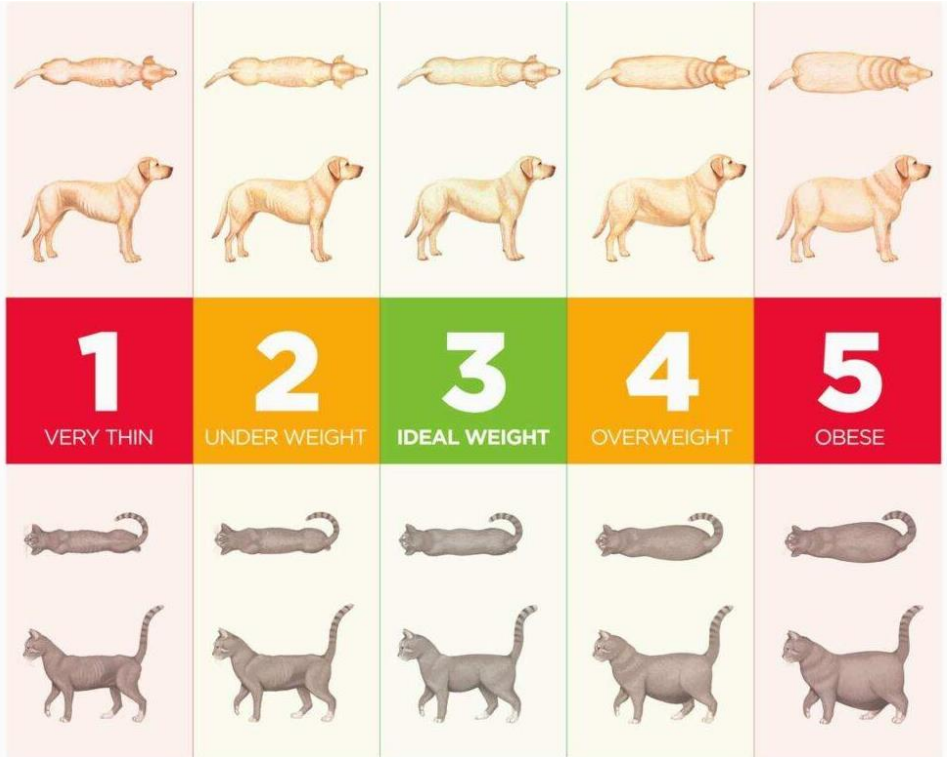
KATHERINE OAKES, DVM

DECEMBER 7TH, 2024

CLINICAL NUTRITION SYMPOSIUM

DEFINITIONS

- Obesity: excess white adipose tissue (body fat) that contributes to disease
- BCS: diagnosed via physical examination
  - 1-5 or 1-9
  - Evaluation of subQ fat

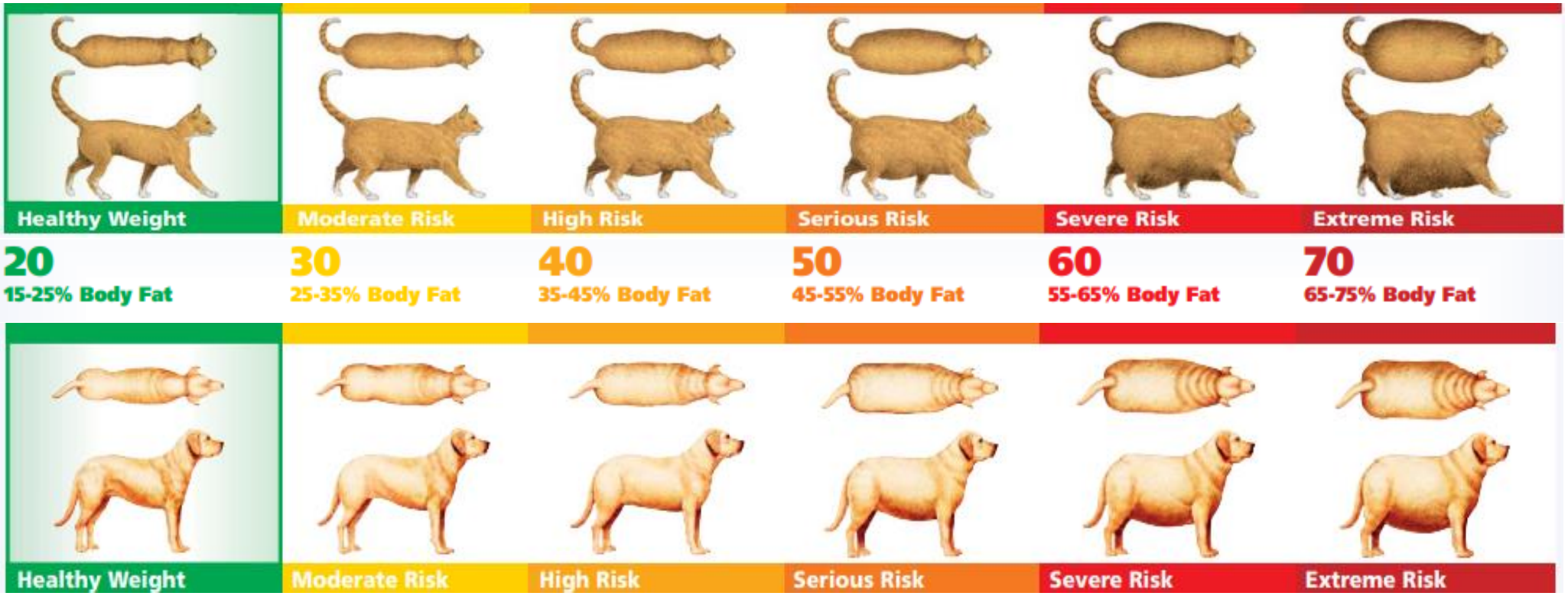


Salt, et. al (2018); Laflamme, et. al (2012); Chiang, et al (2022); Hill's Pet Nutrition

BODY CONDITION SCORE

Association for Pet Obesity Prevention

BODY FAT INDEX (BFI) RISK CHART



Hill's Pet Nutrition

DEFINITIONS

AAFP-AAHA Feline Lifestage Guidelines (2021)

DEFINITIONS

Table 2. The 14 breeds with the highest median age at death (>13.5 years) showing the Kennel Club breed group that these breeds belong to, the published values for average "ideal" bodyweight (Alderton, 1993), number of deaths in each breed and median age at death

Breed group	Breed	Average bodyweight (kg)	Median age at death (year)	Number of deaths
Small	Lakeland terrier	5·5	15·46	14
Small	Irish terrier	11·5	14·83	2
Medium	Canaan dog	20·5	14·63	2
Toy	Toy poodle	5·0	14·63	20
Small	Swedish vallhund	13·0	14·42	17
Small	Tibetan spaniel	5·5	14·42	125
Small	Lhasa apso	6·5	14·33	84
Toy	Australian silky terrier	4·5	14·25	5
Small	Border terrier	6·0	14·00	177
Small	Cairn terrier	7·0	14·00	124
Small	Miniature poodle	13·0	13·92	23
Small	Basenji	10·0	13·54	46
Medium	Bearded collie	22·5	13·50	278
Toy	Italian greyhound	4·0	13·50	46

Table 3. The 11 breeds with the lowest median age at death (<8 years) showing the Kennel Club breed group that these breeds belong to, the published values for average "ideal" bodyweight (Alderton, 1993), number of deaths in each breed and median age at death

Breed group	Breed	Average bodyweight (kg)	Median age at death (year)	Number of deaths
Large	Bullmastiff	50·0	7·46	96
Giant	Leonberger	42·0	7·08	47
Giant	Irish wolfhound	47·5	7·04	112
Giant	St Bernard	70·0	7·00	53
Small	Shiba Inu (Japanese)	11·5	7·00	3
Giant	Mastiff	83·0	6·83	80
Giant	Bloodhound	43·0	6·79	82
Giant	Great Dane	50·0	6·50	171
Medium	Bulldog	24·0	6·29	180
Medium	Shar pei	18·0	6·29	60
Large	Dogue de Bordeaux	47·5	3·83	5

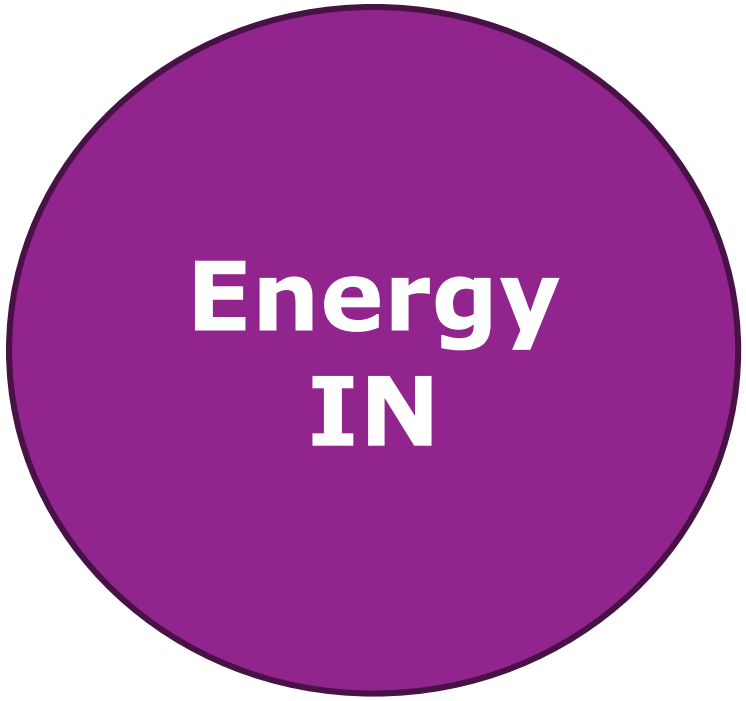
Adams, et al (2010)
The Institute of Canine Biology

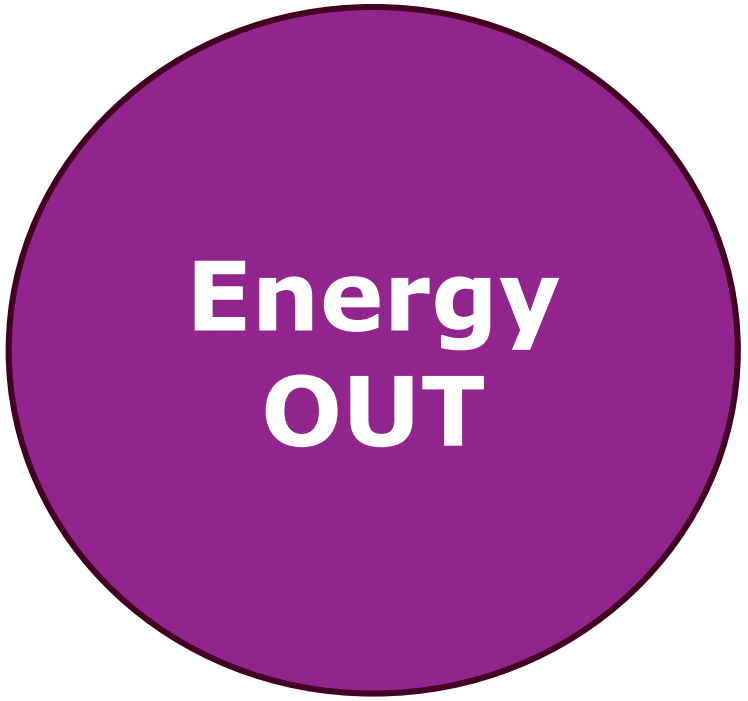
PREVALENCE

Most common form of malnutrition

Association for Pet Obesity Prevention (2022); Blanchard, et. al (2024); Buffington (2014)

PATHOPHYSIOLOGY





PATHOPHYSIOLOGY

- **Overall: EXCESS CALORIES**
  - Over-feeding
  - Behavioral
  - Medical conditions
  - Sedentary lifestyle

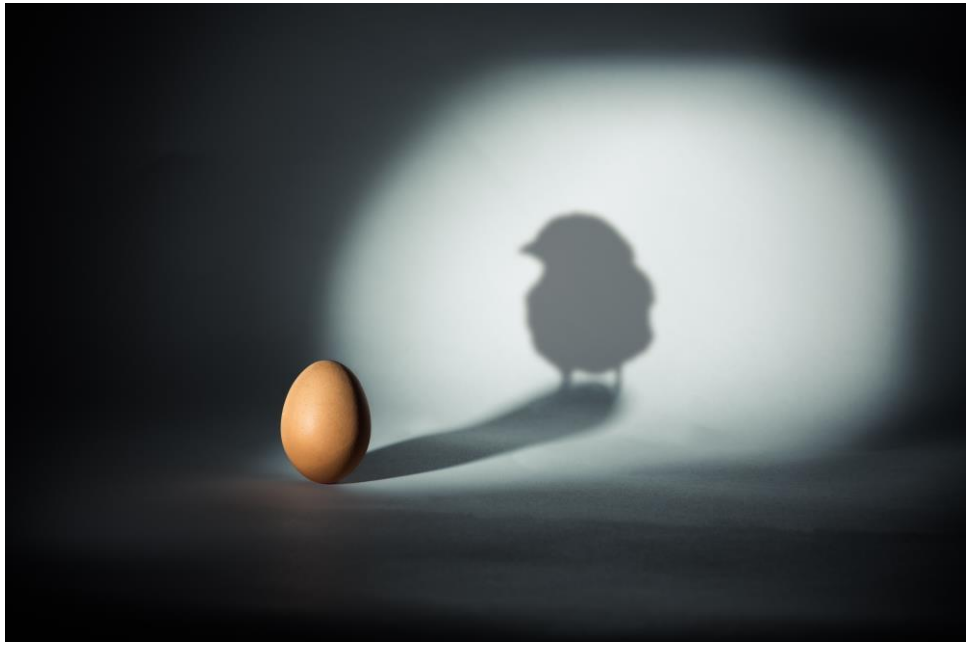
- **Aging pets:**
  - ↓ energy requirements
  - ↑ protein requirements
    - Diet-induced thermogenesis

RER = 70 * (ideal BW_{kg})$^{0.75}$
MER = RER x adjustment factor

Laflamme et al, (2012); Churchill & Eirmann, (2021)

MEDICAL FACTORS

- Polyphagia
  - Cushing's disease
  - Iatrogenic - steroid administration
- Altered metabolism
  - Hypothyroidism
- Hyperlipidemia
- Osteoarthritis



Chiang et. al (2022); Blanchard et. al (2024)

OTHER FACTORS

- Age
- Breed
- Neuter status
- Sex?
- Owner perception of weight

Chiang et. al (2022); Blanchard et. al (2024); Association for Pet Obesity Prevention

CONSEQUENCES & CO-MORBIDITIES

- State of chronic inflammation
- Osteoarthritis
- Neoplasia
- Diabetes mellitus & insulin resistance
- Shortened life span
- Higher anesthetic risk
- Respiratory disorders/dyspnea
- Metabolic disease
- Dermatopathy/inability to groom
- Dental disease
- Urinary tract infections

Lund et al (2005)

CONSEQUENCES & CO-MORBIDITIES

- **State of chronic inflammation**
- **Osteoarthritis**
- **Neoplasia**
- **Diabetes mellitus & insulin resistance**
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- Higher anesthetic risk
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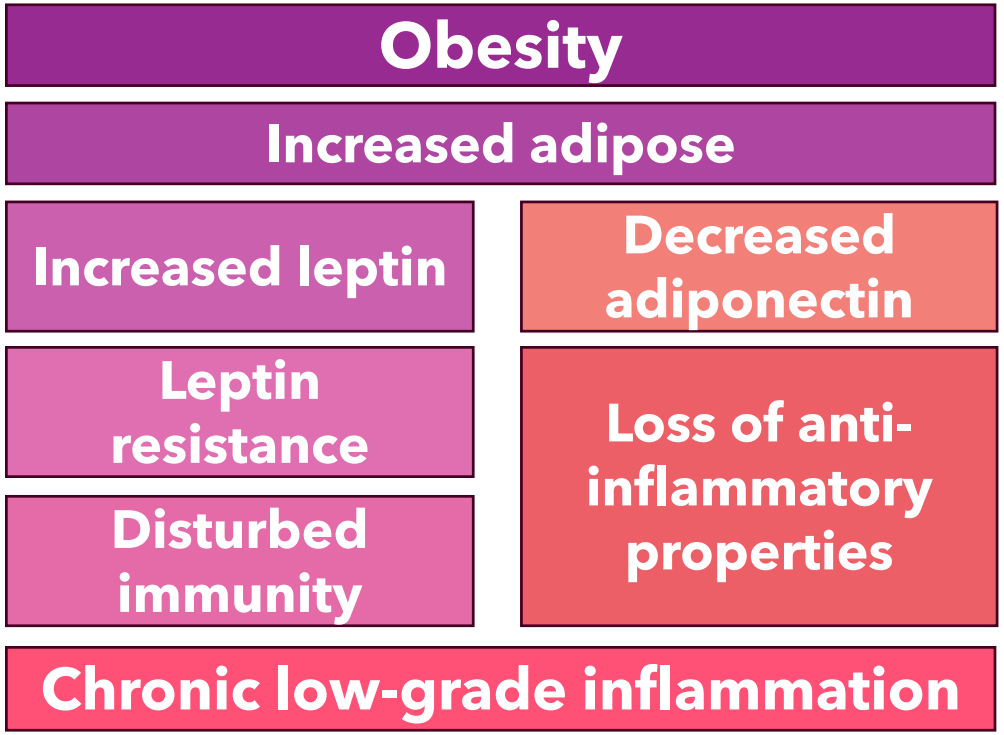
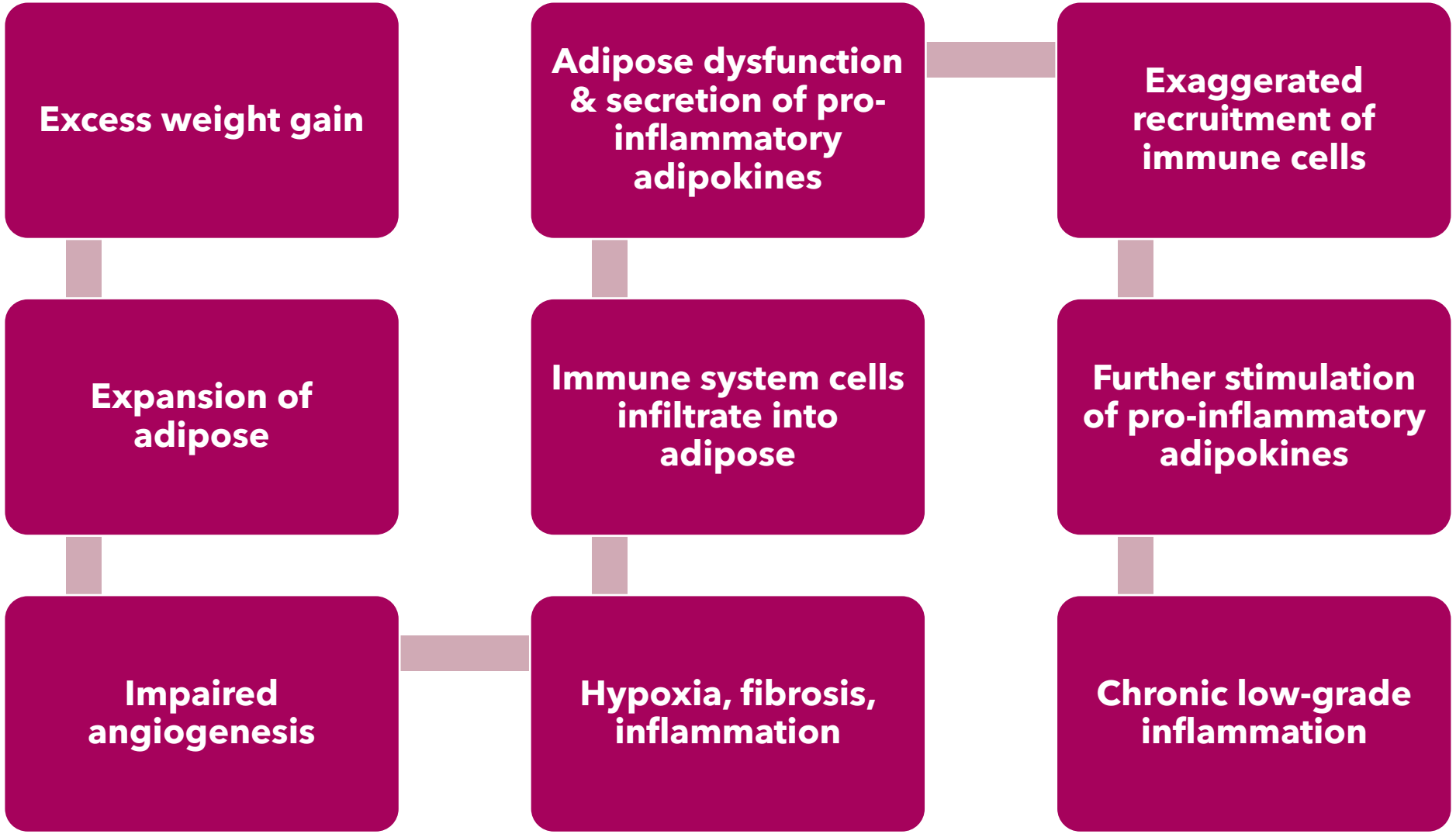
Lund et al (2005)

CHRONIC INFLAMMATION

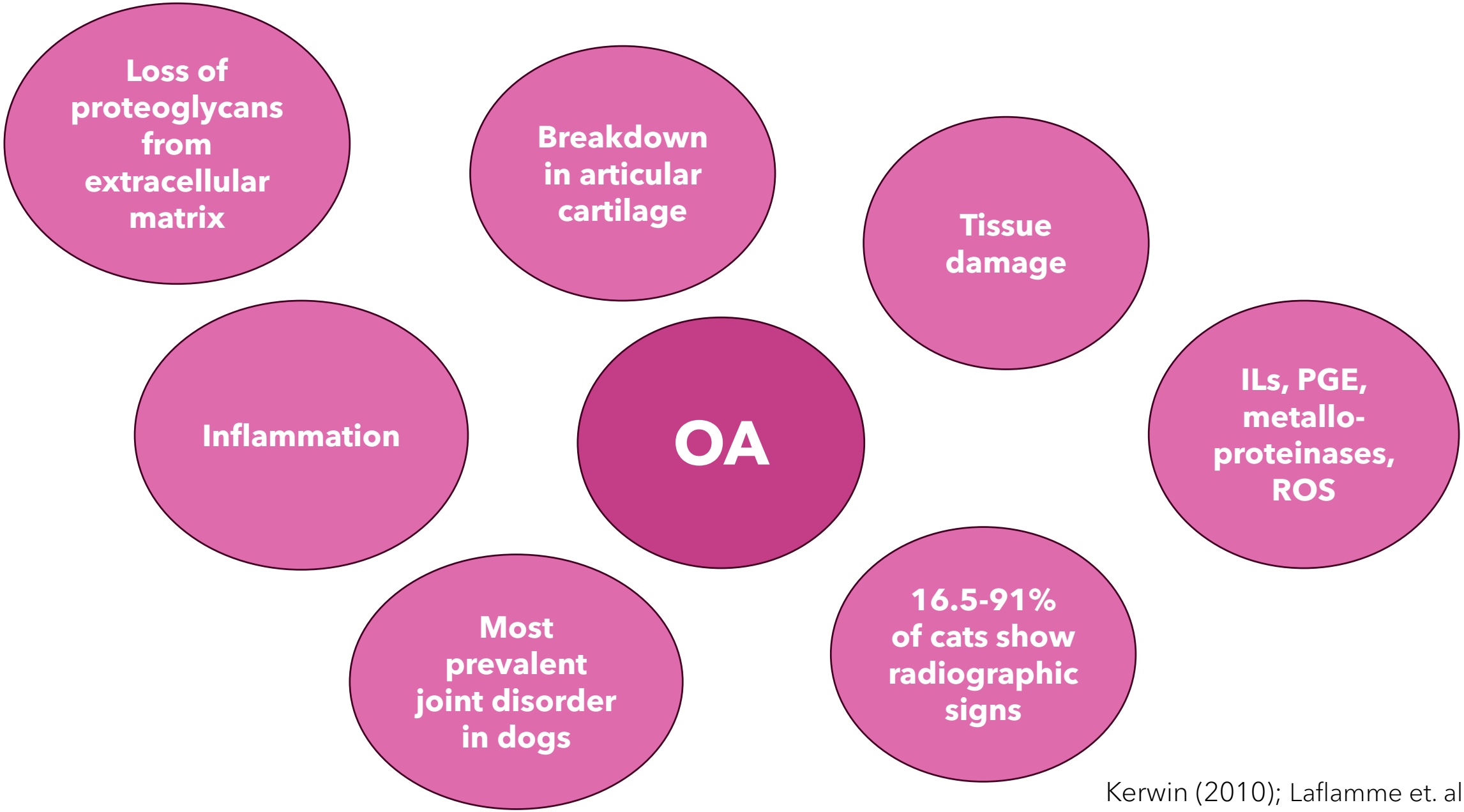
- Adipose = metabolically active endocrine organ
  - Active producer of:
    - Hormones
      - Leptin
      - Resistin
    - Inflammatory cytokines
      - TNF-α (tumor necrosis factor alpha)
      - Interleukins
      - C-reactive protein (CRP)
  - Downregulates adiponectin



Laflamme et al (2012); Marchi et al (2022)



Marchi et al (2022)



Kerwin (2010); Laflamme et. al (2012)

OSTEOARTHRITIS

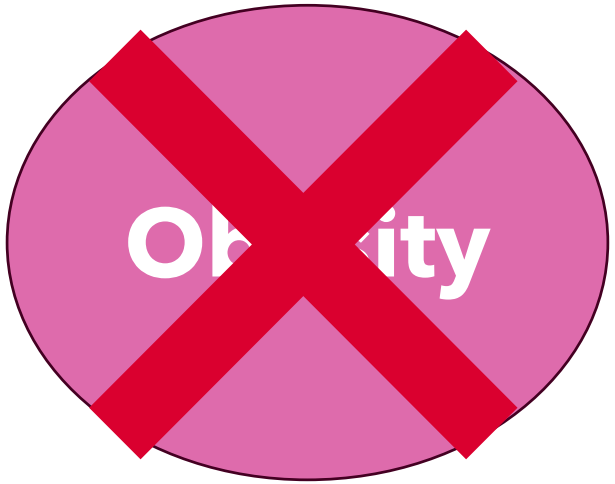
Obesity

- Added weight = stress on joints
- ↑ Oxidative stress (ROS)
- ↑ Inflammatory mediators

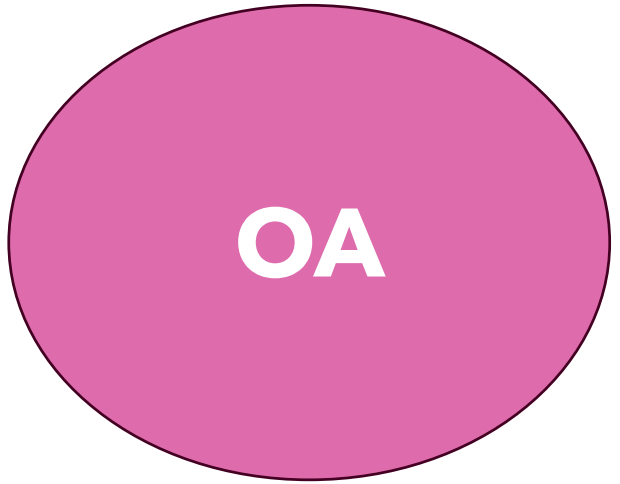
OA

Laflamme et. al (2012)

OSTEOARTHRITIS



- ↑ Joint mobility
- ↓ Lameness/pain



Laflamme et. al (2012)

OSTEOARTHRITIS

- Paired feeding study
  - 48 Labrador retrievers
  - Paired by sex and weight within litters
  - Control fed: free fed, then ideal weight energy requirements
  - Restricted/limit fed: 75% of control group
  - 8 year study

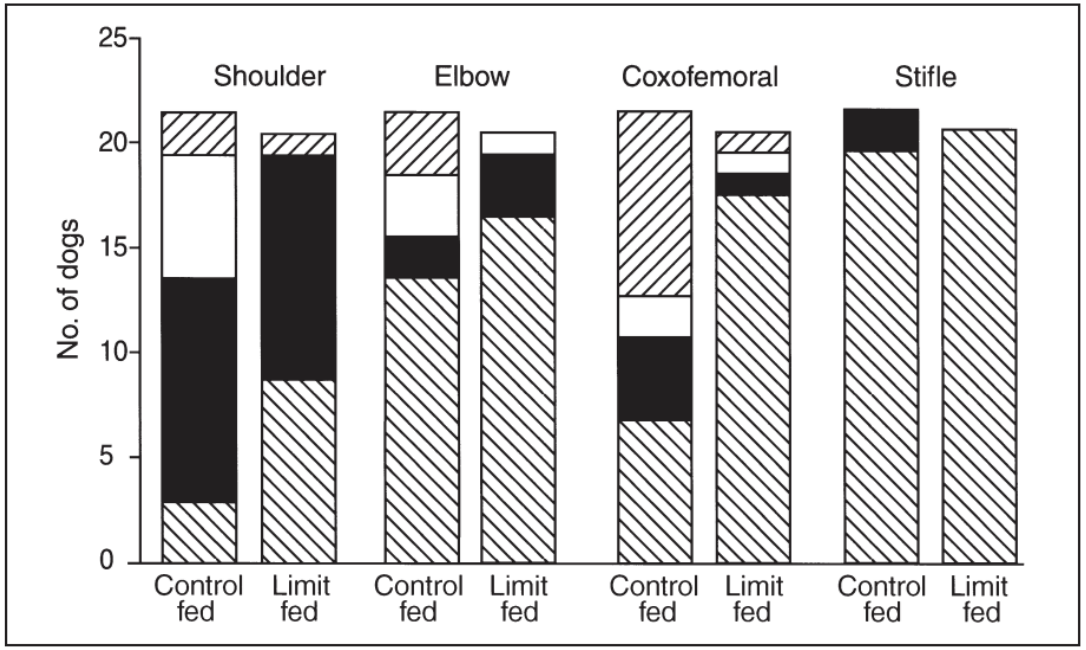


Figure 1—No. of dogs with severe (▨), moderate (□), mild (■), or no (▧) radiographic lesions of osteoarthritis in various joints.

Kealy et al (2000)

OSTEOARTHRITIS

Radiographic OA prevalence	
Multiple joints	Control-fed > restricted-fed
Hip joint	Control-fed: 15/22 Restricted-fed: 3/21
Shoulder joint	Control-fed: 19/22 Restricted-fed: 12/21
Elbow joint	Increased severity in control-fed

Kealy et al (2000)

OSTEOARTHRITIS

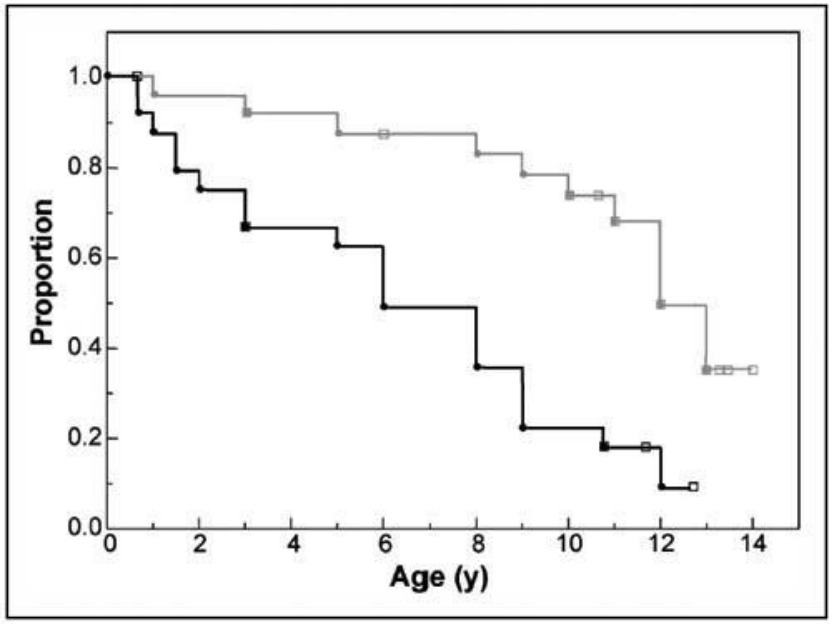


Figure 1—Results of Kaplan-Meier analysis for proportion of Labrador Retrievers (gray line = restricted-fed dogs [n = 24]; black line = control-fed dogs [24]) without radiographic evidence of hip joint osteoarthritis.

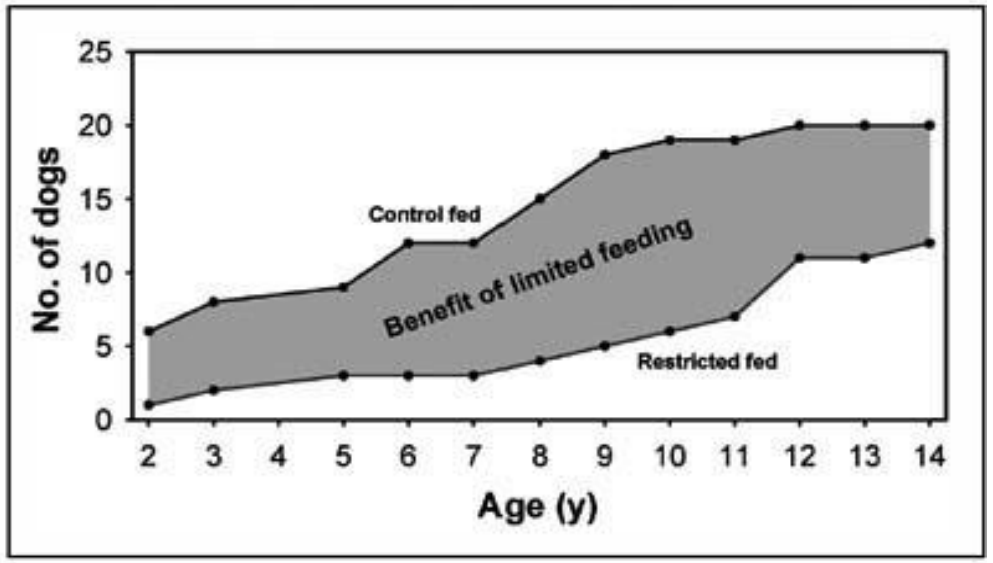
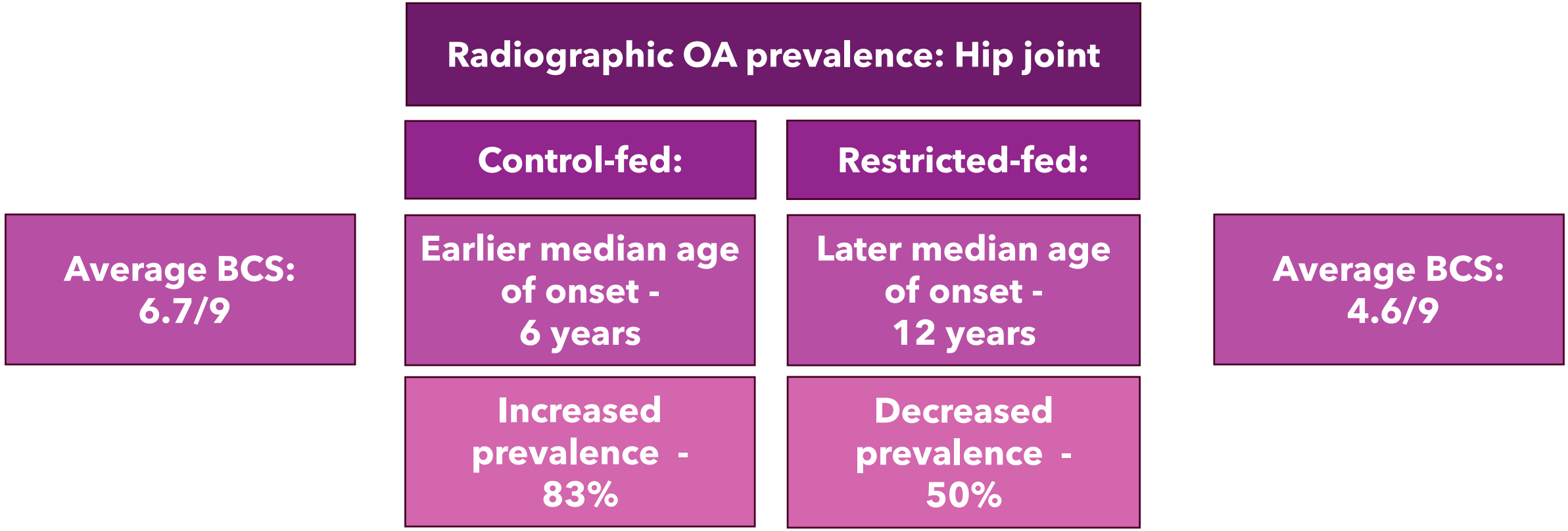


Figure 2—Cumulative prevalence of hip joint osteoarthritis in the same dogs as in Figure 1.

Smith et al (2006)

OSTEOARTHRITIS



Smith et al (2006)

OSTEOARTHRITIS

- Prospective study - 14 client-owned dogs
  - Clinical & radiographic OA
  - 20%+ above ideal body weight
  - Therapeutic weight-loss diet – 16 weeks
  - Six follow-up visits assessed:
    - Body weight
    - Pelvic circumference
    - Severity of lameness

8.6% initial BW lost
6.92% pelvic circumference lost

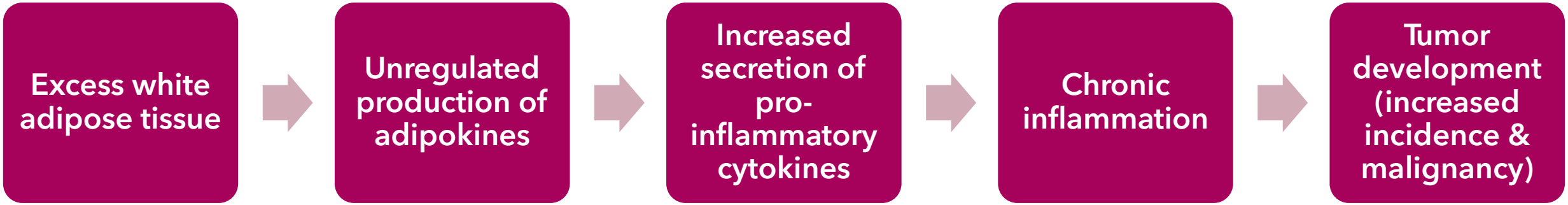
6.10%+ BW loss caused significant decrease in lameness

8.85%+ BW loss caused ground reaction forces measured in worst affected limb to increase

BW reduction causes a decrease in clinical signs of lameness

Marshall et al (2010)

NEOPLASIA



Marchi et al (2022)

Hormonal carcinogenesis

In humans

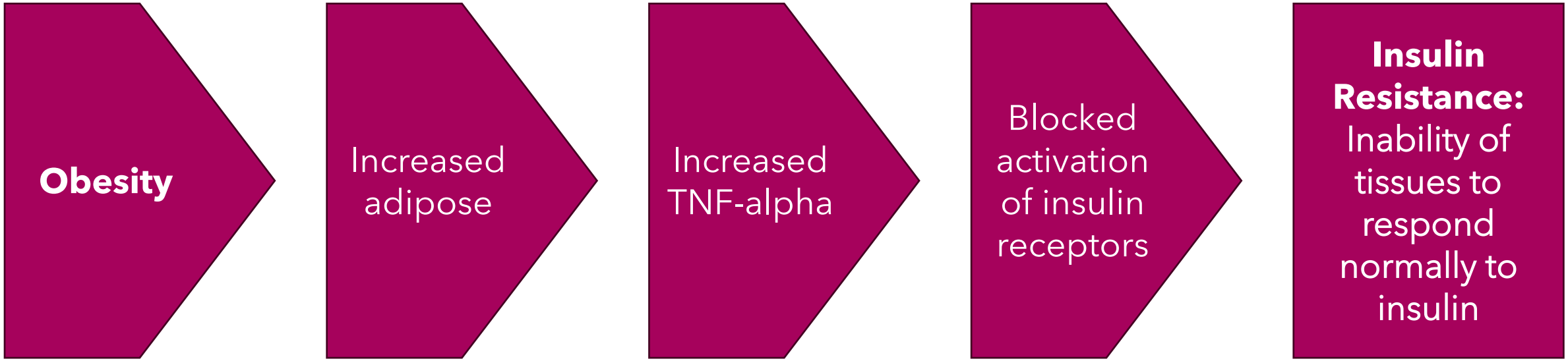
- Adipose tissue dysfunction
- High estrogen
- Post-menopausal breast cancer
- Inflammatory state
- Estrogen signaling dysfunction
- Mutagenesis, DNA damage, cell proliferation, angiogenesis

In animals

- Prolactin & steroid hormones
- Canine mammary cancer
- Adipose secretion of aromatase
- Conversion of androgen hormones into estrogen

Lund et al (2005); Marchi et al (2022)

INSULIN RESISTANCE



Laflamme et al (2012)

INSULIN RESISTANCE

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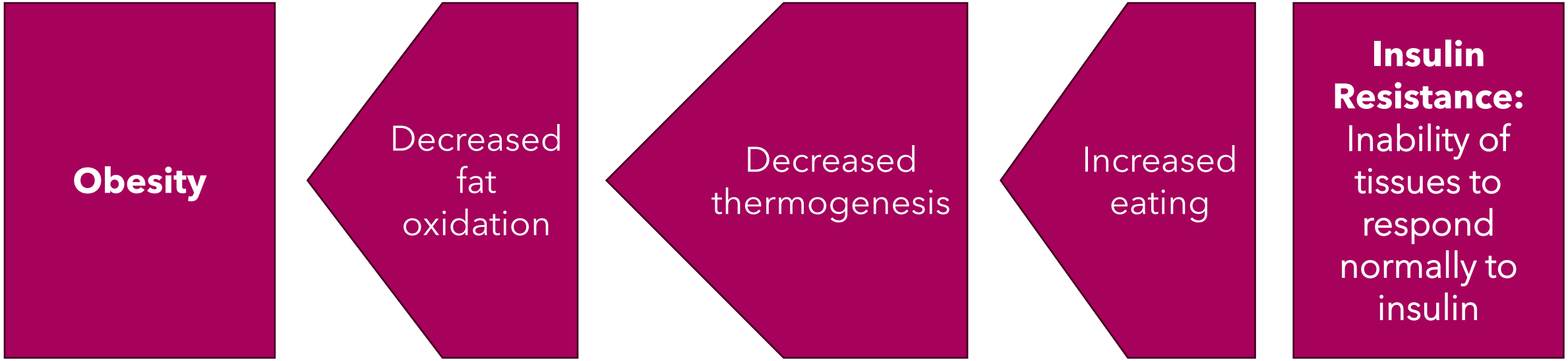
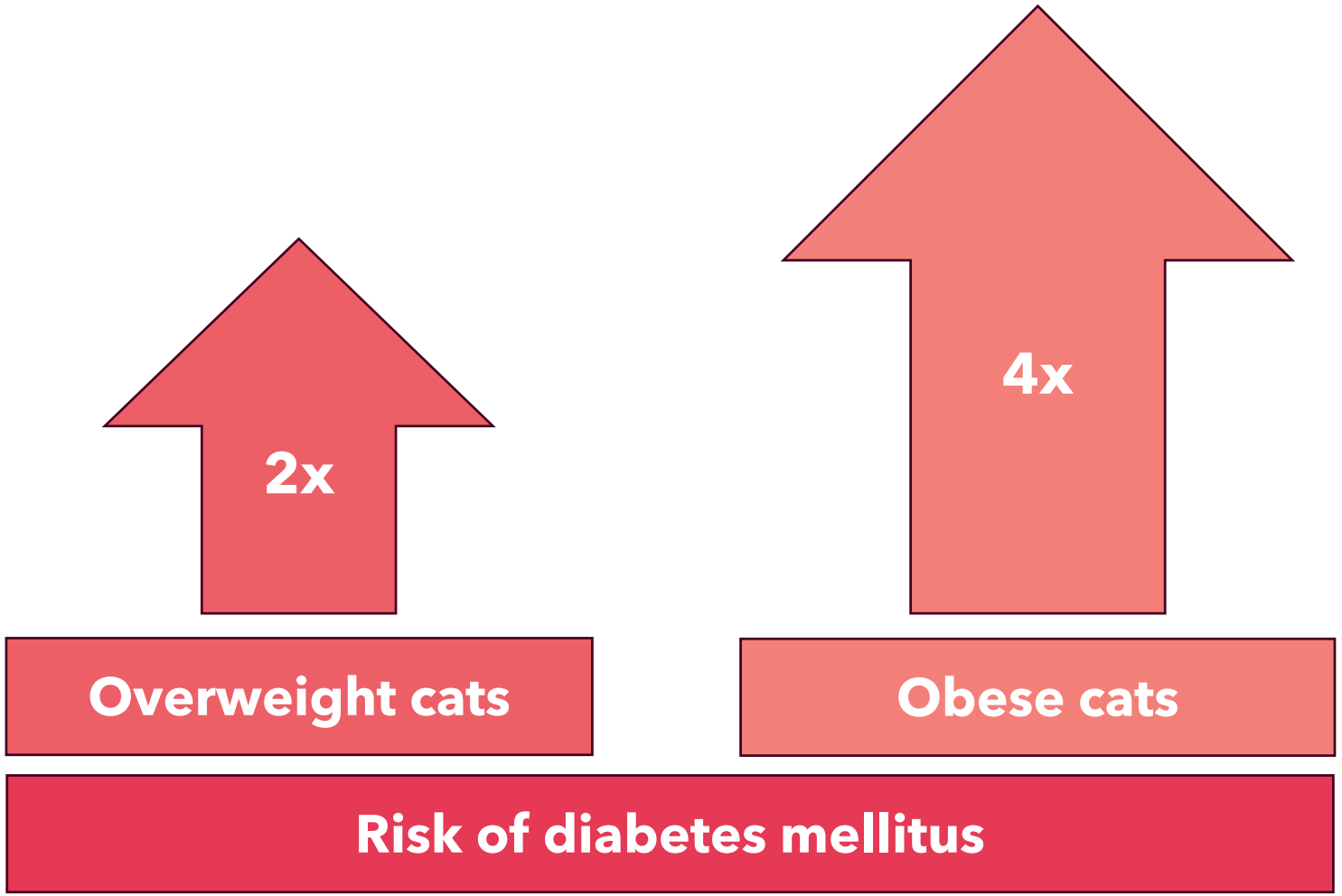


Laflamme et al (2012)

A QUICK NOTE ON DIABETES



Lund et al (2005);
Laflamme et al (2012)

SHORTENED LIFE SPAN

- Overweight dogs:
  - ↑ Risk of instantaneous death
  - ↓ Lifespan in all breeds and ages

13 years **11.2 years**

- Indirect associations with lifespan
  - Predisposition or exacerbation of disease
    - Lean dogs have delayed onset for requiring long-term treatment of chronic diseases, including OA
  - Decreased quality of life

Kealy et al (2002); Salt et al (2018)

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- Overweight dogs:
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  - Decreased quality of life

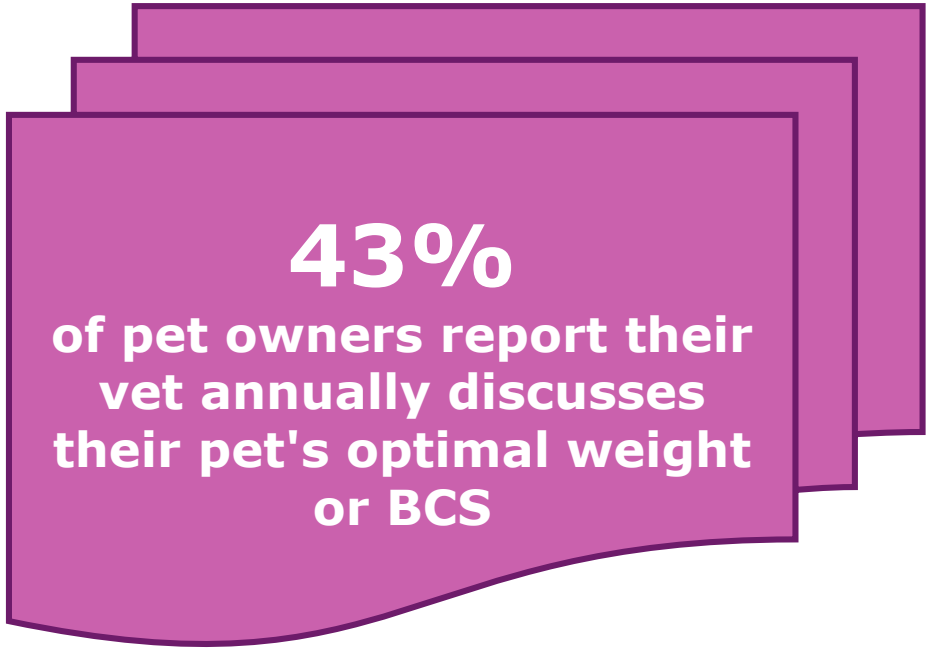
#1 reason

why dog & cat owners would participate in a weight management program for their pet

Kealy et al (2002); Salt et al (2018);
Davies et al (2024); Sutherland et al (2024)

HOW CAN WE HELP?

- Obese/overweight **IS** a diagnosis!
  - Not consistently recorded
  - Discuss ideal weight
- Complete physical exam & records
  - Body weight **and** body condition score
  - Muscle condition score
  - Diet history
- Client education
- Feel comfortable making a weight loss plan



Chiang et al (2022); Association for Pet Obesity Prevention 2023 Survey Data

DEVELOPING A WEIGHT LOSS PLAN

- Negative energy balance
  - Therapeutic weight loss food
    - Reduction in calories
    - ↑ Protein
    - ↑ Fiber
  - ↑ Exercise
- Treats: 10% of total diet
- Consistent monitoring
- Client education

- **Aging pets:**
  - Consider comorbidities
  - Taste preferences/aversions
  - Remember higher protein requirements
  - Omega-3's & antioxidants

Cats: 0.5-1% BW lost per week

Dogs: 1-2% BW lost per week

"BETTY"

- 12 y/o FS Beagle mix
- Starting weight: 33 lbs
- Starting BCS: 8/9
- Enrolled May 2023

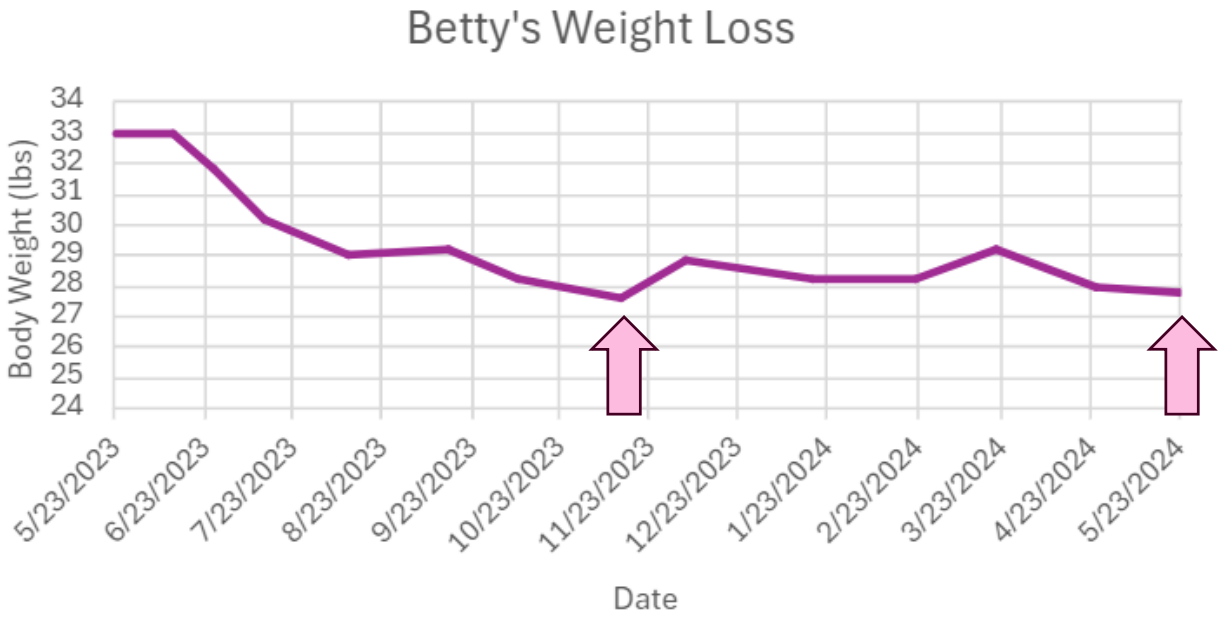

20
15-25% Body Fat
30
25-35% Body Fat
40
35-45% Body Fat
50
45-55% Body Fat
60
55-65% Body Fat
70
65-75% Body Fat
Healthy Weight
Moderate Risk
High Risk
Serious Risk
Severe Risk
Extreme Risk

Current Weight	Ideal Body Weight [lbs]					
	Body Fat % 20	Body Fat % 30	Body Fat % 40	Body Fat % 50	Body Fat % 60	Body Fat % 70
10	10	8.8	7.5	6.3	5.0	3.8
11	11	9.6	8.3	6.9	5.5	4.1
12	12	10.5	9.0	7.5	6.0	4.5
13	13	11.4	9.8	8.1	6.5	4.9
14	14	12.3	10.5	8.8	7.0	5.3
15	15	13.1	11.3	9.4	7.5	5.6
20	20	17.5	15.0	12.5	10.0	7.5
25	25	21.9	18.8	15.6	12.5	9.4
30	30	26.3	22.5	18.8	15.0	11.3
35	35	30.6	26.3	21.9	17.5	13.1
40	40	35.0	30.0	25.0	20.0	15.0
45	45	39.4	33.8	28.1	22.5	16.9
50	50	43.8	37.5	31.3	25.0	18.8
55	55	48.1	41.3	34.4	27.5	20.6
60	60	52.5	45.0	37.5	30.0	22.5
65	65	56.9	48.8	40.6	32.5	24.4
70	70	61.3	52.5	43.8	35.0	26.3
75	75	65.6	56.3	46.9	37.5	28.1
80	80	70.0	60.0	50.0	40.0	30.0
85	85	74.4	63.8	53.1	42.5	31.9
90	90	78.8	67.5	56.3	45.0	33.8
95	95	83.1	71.3	59.4	47.5	35.6
100	100	87.5	75.0	62.5	50.0	37.5
105	105	91.9	78.8	65.6	52.5	39.4
110	110	96.3	82.5	68.8	55.0	41.3
115	115	100.6	86.3	71.9	57.5	43.1
120	120	105.0	90.0	75.0	60.0	45.0
130	130	113.8	97.5	81.3	65.0	48.8
140	140	122.5	105.0	87.5	70.0	52.5
150	150	131.3	112.5	93.8	75.0	56.3
160	160	140.0	120.0	100.0	80.0	60.0

"BETTY"

- 1 year later... (May 2024)

- Ending weight: 27.8 lbs
- Ending BCS: 5/9



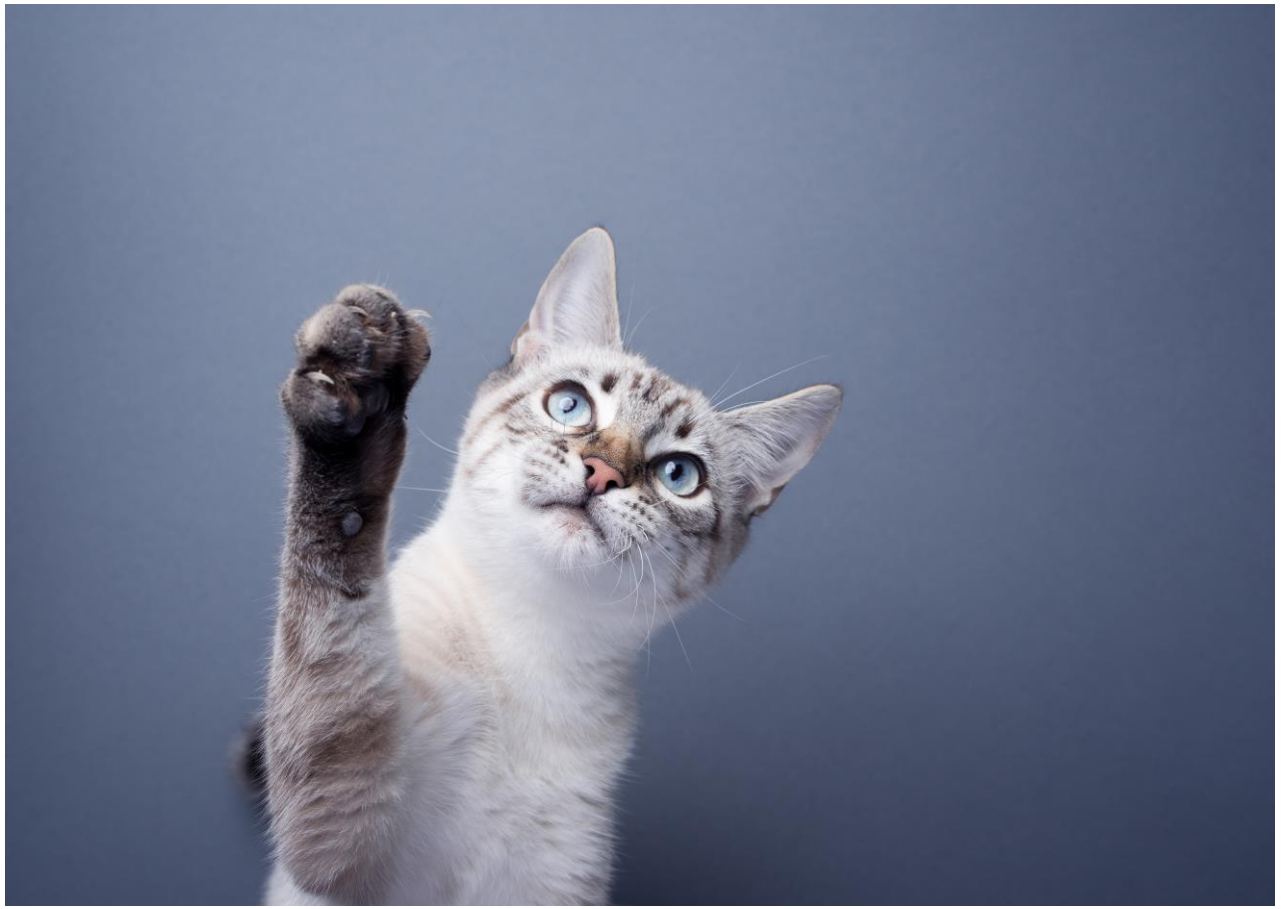
ONE LAST THING...

This information is for educational purposes only.

Clinical Nutrition Internship is funded by Hill's Pet Nutrition.

Thank you to Dr. Nelson & Dr. Getty! ☺

QUESTIONS?



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