Feeding Racing Greyhounds

by Dr John Kohnke BVSc RDA
Nutritional Aims

• Provide a palatable, low-bulk, highly digestible, economical ration.
• Ensure optimum energy, protein, fat and fibre balance to maximise energy density and minimise gut weight.
• Avoid low or inadequate levels of calcium, electrolytes, trace-minerals and vitamins.
• Counteract physical and mental stress.
• Maintain an active immune response.
Racing Greyhounds

Energy Requirement

• Greyhounds have a higher maintenance energy need than other breeds of dog.
• Leaner body mass, higher weight density.
• Thin hair coat - more heat loss.
• Higher metabolic rate relative to body weight and size.
• Hyperactive, self-exercising greyhounds.
• Increased physical and mental stress.
Energy

Requirements 30 kg bwt

• Maintenance - body function  1700 kcalME/day

• Exercise
  ➢ 4-5% increase...1780 – 2390 kcalME/day to temp extremes

• Thermoregulation
  ➢ cold (heat loss) add 40kcalME per degree C drop below 15°C
  ➢ hot (panting) add 40kcalME per degree above 30°C

• Behaviour
  ➢ excitable greyhounds add 100kcalME
Energy Sources

• Carbohydrates - extra cold weather heat of fermentation
  ➢ dry foods - avoid excess = cramping

• Proteins - 30-35% on DM basis = 17-20% Crude protein ‘as fed’
  ➢ dry foods and meat.

• Fat (high energy)
  ➢ dry foods, meat, extra fat = meat fat or veg oils - extra hot weather or dehydrated greyhounds

• Fibre (limited) – max 5% for minimum stool bulk
  ➢ dry foods, vegetables.
Protein

• Provides amino acids for muscle, bones, tissue growth, energy source.
• Require 30-35% crude protein on a dehydrated basis.

Sources
• Meat  17-21% crude protein ‘as fed’ = 60% on dry matter basis.
• Dry foods = range from 12-35% crude protein.
• Avoid excess protein above 30% in ration as it may limit performance.
Fats

• Contain only energy and water $= 107\text{g H2O/100g}$

Requirements
• Provide energy, essential fatty acids and fat soluble vitamins.
• Require 12-15% on ‘as fed’ basis.
• Studies indicate a 30-33% energy base from fat will increase speed and performance.
• Omega-3 : Omega-6 ratio $= 1.0-3.5$ optimum
  (Fish oils for anti-inflammatory fatty acids – eicosanoids)
Minerals

Bone Minerals  30 kg bwt

• **CALCIUM**  Supplement meat based diets to 4,000- 5,000mg daily
  Most important in young greyhounds breaking-in and first race prep

• **PHOSPHORUS**  -up to 5,000mg daily mostly in meat and dry foods
  Too much reduces calcium uptake

• **MAGNESIUM**- 800-900mg daily mainly dry foods
  Nervous greyhounds supplement with organic magnesium and natural vitamin E  eg Sprinter GOLD Focus

• **VITAMIN A** and **VITAMIN D** required for calcium uptake and bone maintenance

Mainly provided in supplements - Vitamin D very important in kennelled greyhounds –growing and racing, in-whelp bitches
Greyhound Injuries

Centrifugal force hits left shoulder on second stride into corner.

Centrifugal force = \( \frac{\text{Body Weight of Greyhound} \times \text{Speed}^2}{\text{Radius of Track Circle}} \)

Young, heavy, fast greyhounds have highest risk of overload injuries to lower limb.
Centrifugal force

Bone stress loads increase when cornering at speed.
Trace-minerals

- **ZINC** – bone, tendon and muscle development, metabolism
- **COPPER** – joint cartilage, tendons, blood formation, metabolism
- **MANGANESE** - bones, blood formation, metabolism
- **IRON** - blood formation, muscle myoglobin, metabolism
- **IODINE** – growth and metabolism – avoid excess in sea weed supplements
- **SELENIUM** – antioxidant in muscles in conjunction with Vitamin E organic chelated selenium sources better absorbed and less toxic
- **CHROMIUM** – glucose control, muscle development organic chelated sources safe
- **COBALT** – blood formation, metabolism, component within B12 (4.38%) stimulates red cell synthesis and splenic storage for more oxygen - not greatly elevated from dietary oral sources
- **SILICON** - joint cartilage and bone strength - pure zeolite safer
Vitamins

• Fat soluble

Vitamins A, D, E and K

• Vitamin E - RRR form most biologically/metabolically active 1.6 times more potent compared to other natural vitamin E sources
Max SAFE daily 450mg Vitamin E

Water soluble

• B-group vitamins – metabolism, tissue development
• Choline – liver detox function, metabolism
• Biotin - hair and nails, metabolism
• Vitamin C- immune system, antioxidant with Vitamin E & Vitamin A-
Max dose 250mg Vitamin C daily
Amino Acids

- **Branched chain Amino Acids** - leucine, isoleucine, valine - *muscle recovery* - bypass liver metabolism, liver stress
- **Methionine** - *muscle development and liver detox, urinary acidification for cystitis 1500mg daily*
- **Other amino acids** – *muscle growth and metabolism*
- **Creatine** – *high energy source*
- **Glutamine** – *gut rehab and muscles*
Electrolytes and Salts

• Sodium and Chloride - greyhound requirement low as do not sweat – low salt electrolyte mix- horse salts not suitable for greyhounds

• Potassium- increased requirement due to losses - nervousness, barking, muscle pain

• Magnesium - muscle function, supplementation helpful in cramping, nervous greyhounds

• Citrate, bicarbonate, lactate- muscle buffers (Pre-race rehydration drinks during hot weather)
# Water

## Requirement

- **Approx. 2000mL daily (up to 3000mL in hot weather)**

<table>
<thead>
<tr>
<th></th>
<th>Water Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>700g Meat</td>
<td>400mL</td>
</tr>
<tr>
<td>350g Dry food</td>
<td>80mL</td>
</tr>
<tr>
<td>Milk</td>
<td>250mL</td>
</tr>
<tr>
<td></td>
<td><strong>730mL</strong></td>
</tr>
</tbody>
</table>
## Water

<table>
<thead>
<tr>
<th>Other Sources</th>
<th>530mL (2 cupfuls)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metabolism</td>
<td>300mL</td>
</tr>
<tr>
<td>Fat (1 tablespoon)</td>
<td>20mL</td>
</tr>
<tr>
<td>Moisten dry food</td>
<td>250mL</td>
</tr>
<tr>
<td>Vegetables</td>
<td>200mL</td>
</tr>
<tr>
<td><strong>Shortfall</strong></td>
<td></td>
</tr>
</tbody>
</table>

- Most Greyhounds drink 300-400mL water daily
# Meats

<table>
<thead>
<tr>
<th>Meats (all meat low in calcium:phosphorus)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beef</strong></td>
</tr>
<tr>
<td>Staple diet, lean beef 10% fat</td>
</tr>
<tr>
<td>Red meat allergy</td>
</tr>
<tr>
<td><strong>Horse</strong></td>
</tr>
<tr>
<td>Low fat</td>
</tr>
<tr>
<td>Less digestible protein</td>
</tr>
<tr>
<td>Increased red meat allergy</td>
</tr>
<tr>
<td><strong>Chicken</strong></td>
</tr>
<tr>
<td>Low in Iron</td>
</tr>
<tr>
<td>‘soft muscles’</td>
</tr>
<tr>
<td>High bacteria count</td>
</tr>
<tr>
<td><strong>Kangaroo</strong></td>
</tr>
<tr>
<td>Very low fat</td>
</tr>
<tr>
<td>Lower protein digestibility</td>
</tr>
<tr>
<td><strong>Lamb</strong></td>
</tr>
<tr>
<td>Variable fat</td>
</tr>
<tr>
<td>Low allergy with rice</td>
</tr>
<tr>
<td><strong>Fish</strong></td>
</tr>
<tr>
<td>Very low fat</td>
</tr>
<tr>
<td>High protein</td>
</tr>
<tr>
<td>Small, sharp bones</td>
</tr>
</tbody>
</table>
Extrusion
Heat and Pressure

Raw Starch

Enzyme

Cooked Starch (Extrusion)
Common Feeding Questions

1. Meat – Minced or Cubed?
2. Freezing – Does it affect meat?
3. Meat – raw or cooked?
4. Offal meats – are they safe?
5. Dry food – the total diet?
6. Meat fat or vegetable oil – which is best?
Racing Greyhounds

New Nutritional Findings

• Adding at least 50% meat by weight to diet improves performance.
• Excess protein may limit performance.
• Excess carbohydrates increase risk of cramping.
• Excess fat reduces speed but increases stamina over distance races.
• Increasing fat in diet, not protein, may improve performance when carbohydrates are adequate.
Racing Greyhounds

New Nutritional Findings

• Energy for muscle contraction is stored as high energy phosphates and glycogen in muscles.
• Performance can be improved by feeding diets that provide the following contribution to total energy.

<table>
<thead>
<tr>
<th>Carbohydrates</th>
<th>42%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fat</td>
<td>33%</td>
</tr>
<tr>
<td>Protein</td>
<td>25%</td>
</tr>
</tbody>
</table>
Feeds and Feeding
Greyhound Feeding

Kcals Metabolisable Energy per Gram

Carbohydrates: 3.5
Protein: 3.5
Fat: 8.7

Types of Energy Source
Beef

• Traditional red meat
  ➢ Well accepted

• Variable fat content
  ➢ 5-15%

• Fatty beef useful for dehydration

• Better digested than horse meat protein
Horse Meat

• Mixed 50:50 with beef
• Low in protein and fat
• Not as well accepted
  ➢ Red meat allergy
• Step-wise introduction
Mutton and Lamb

• Higher in fat than beef
• Sheep hearts and tongues useful
• Low allergy meat – feed with rice
• Step-wise introduction
• Monitor body weight
Chicken Meat

- Higher protein than beef
- Variable fat
  - age of bird
- Low in iron
  - 0.6 mg : 2.3 mg beef /100g

Do not refrigerate to store minced chicken meat with skin - Salmonella spp diarrhoea
Fish

• Two types:
  ➢ Lean fish – low in fat, high in protein
  ➢ Oily fish – variable in fat

• Good protein digestibility, but low in iron

• Check for bones

• Poach or boil (especially carp)

• May contain heavy metal residues

• Ideal after race, light meat
Tripe

- Low in every major nutrient
- Provides fluid, add extra fat
- Boil to improve acceptance
- Mix 50:50 with beef – diet change
- Tedious and smelly to prepare
Bones

- Provide calcium if chewed
- Gnawing cleans teeth
- May improve digestion
- Brisket bone better than long bones
- Do not feed cooked bones in mutton flaps
Cooked Stews

- Ideal lay-off meal
- Provide extra fluid
- Meat 50-60%, 20% cereal grain & 20% vegies
- Prepare stews in bulk
- Ideal post-race with high protein
- Dry food and/or 2 eggs
Greyhound Injuries

Avoiding Injuries

• Provide a well balanced diet with calcium and vitamin D.
• Adequate pre-race warm-up.
• Check for injuries after each gallop.
• Locate and treat injuries early and until they have repaired.
• "Ice it first, then choose a therapy"
Dry Foods

- Range of protein/fat content
- Formulated for meat-based, minimum meat or no meat diets
- Must be soaked – add warm water
- Contain added minerals and vitamins
- Some contain performance aids
- May need vitamin D supplement
Vegetables

• Provide fibre and fluid – dehydration
• High energy – potatoes
• Help avoid constipation
• Can be fed raw or cooked
• No need to peal – except pumpkin
• Care with spinach cooking water
• Cook by boiling or microwaving
Eggs

• Useful source of energy, protein, vitamins
• Cost
• Limit to 4 whole raw/cooked eggs
• Cook egg whites
• Whole eggs – scrub to remove bacteria