

A SUGGESTED HEALTH MANAGEMENT PROTOCOL FOR FALCON FACILITIES IN THE MIDDLE EAST

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INTRODUCTION

Falconry is the art of training birds of prey to hunt quarry in their natural state. The practice was thought to have originated 2000BC in the Far East but recent evidence suggests it was practiced thousands of years before this in the Middle East. In the 1200s, Marco Polo reported that Kublia Khan's hawking party included 10,000 falconers carrying a 'vast variety of Gyr, Peregrine falcons, and Sakers'.

Most falconers practise falconry for fun and their love of birds of prey and nature more generally. In many parts of the Arab world today, the art of falconry is regarded as part of their tradition, something that has been passed down through the generations. Many Arabs feel that it not only links them to their history but also nature and the land they occupy. The sport is popular, widespread and practiced by members of several royal families.

THE FALCON YEAR

Breeding

In the Middle East, most falcon pairs are mated in February and March and breeding continues until June. In the past many falcons were caught in China, Mongolia, and Afghanistan and shipped to the Middle East. From the 1990s on however, many falcons were already being bred in captivity because of the concern over the adverse affect trapping was having on wild populations. After the implementation of CITES in 2002, the shipping of falcons became illegal so that all falcons currently used in hunting are now captive bred. Some facilities breed as many as 300 falcons per year. Birds are able to breed from 4-5 years of age. Breeding stock are selected for their performance in the field, colour, size, conformation and temperament. The usual species kept are Peregrine, Gyr, and Saker falcons. These species are mated to produce purebreds but crossing also occurs. Common cross specie matings include Gyr x Peregrine (this mating produces infertile young) and Gyr x Saker (the resulting hybrid is fertile and is also occasionally recorded in the wild).

Individual pairs are placed in large aviaries. Some advanced facilities provide completely closed facilities and are able to control temperature, humidity, and day length. Mating can either be allowed to occur naturally or by A.I. of human-imprinted birds. Once eggs are produced they can either be left with the falcons, can be put under brooder birds such as bantams, or artificially incubated. If artificially incubated, chicks are often hand reared until 7-10 days when they are fostered to a pair or imprinted females. Some chicks are left with the parents for the full time until weaning while some are selected for imprinting and reared by hand. Advanced facilities have individual video monitoring of each breeding chamber to monitor parental activity and chick growth.

Hacking

The chicks are weaned at 6-8 weeks of age and commence their hacking. Hacking describes a period where the falcons are released into a semi-wild state, usually for about 2 months. In the Middle East, hacking starts in August and September. The young falcons are placed in a hack box, which is essentially a wooden shed several metres square, one side of which can be opened. This is often elevated 1-2m off the ground on support posts. After 5-10 days they are let out. They scramble and climb about like young wild falcons around a nest but, initially, do not fly properly. This is a dangerous time and they need to be monitored. The birds usually return to the box if they feel vulnerable. As the days roll by they become more adventurous and start to flap, with some chicks starting to fly after about 3 days. Hacking is thought to improve hunting and flying skills before the birds are trained in falconry. It is also thought to improve their mental conditioning as they are provided with a greater amount of stimuli and experience. Hacking towers are often in remote locations with windy places being preferred as it encourages the falcons to fly. As time goes by the falcons get more confident and start to fly for longer periods. They learn to fly in strong winds and rain, soar high, ride thermals and interact with each other. While at hack the birds are fed twice daily so they remain accustomed to people and familiar with going in and out of the hack box. As the birds mature some may disappear for several days and they start to self hunt. As a general rule, males tend to self hunt earlier (after 2-3 weeks), females from 4 weeks onwards. How long the birds are at hack depends on the individual falcon and also the weather (if the weather is poor with a lot of rain, the birds don't fly much). Usually birds are at hack 4-8 weeks. By this time they are fit, strong, and confident, hopefully the same as a wild falcon. Some birds are lost while at hack with numbers ranging from 0-30%. The birds are now about 4 months old, the age a wild falcon will leave the nest surroundings and find its own hunting area. The birds are now trapped. The birds don't like going where they have seen other falcons trapped and so they are caught in several locations, in different hacking boxes. Once they are caught they are hooded and put on blocks.

Training and competition

Once caught and placed on blocks the birds can quickly lose their flying skills and fitness. They also get bored from lack of stimuli. If confined and fed they get fat quickly. It is thought much better to keep the birds flying. The birds are fed small amounts frequently and trained to a fist. The birds often feed from a fist within two days and make their first kill within seven days.

Historically trained falcons were principally used to gather food and this is still important in some areas. However mostly today trained falcons hunt quarry for competition or sport. The people involved in the competitive flying of falcons are usually passionate about their birds and it is important to them that the birds do well. Most are fond of their birds and derive pleasure from being with them, seeing them healthy and well cared for, and from seeing them hunt.

Different hunting techniques are employed depending on the type of prey hunted. Prey can be flushed and then the falcon guided from the fist to the quarry. Alternatively birds can wait at height in the sky (often about 800m) for a period of time (good birds will wait for one hour) until prey is flushed by people or dogs [more in Europe than the Middle East] from below them. Once flushed, falcons are assessed on their speed and general ability. Competitive flying starts in the Middle East in October.

Falcons are flown competitively throughout the Middle East and neighbouring countries including Morocco and Turkey by competitors including members of the various royal families.

Health management

Various health programs have been suggested for the maintenance of health in the larger falcon facilities.

Available tests used to monitor health include:

1. Thorough clinical examination;
2. Biochemistry (glucose, urea, calcium, TP, Alb, Glob, AST, CK, Chol, amylase, GLDH, UA, BA) and haematology (PCV, platelets, WCC (diff)) blood tests;
3. Microscopic examination of the droppings and a crop aspirate;
4. Bacterial cultures of the choana (eg *Pseudomonas* – monitor for potential problem);
5. PCR tests for specific diseases such as Chlamydia, herpes, PMV, avian flu, *Mycobacteria* sp – Falcons are very vulnerable to avian flu. Herpes is very rare. The initial wild-caught birds, particularly Gyrs were immunologically naive and experienced high mortality when first brought into captivity. The situation is better now;
6. Blood tests to assess nutrition and performance - vitamin B particularly biotin, Vitamin E/Se, lactic acid, vitamin D₃ (concerned at overdose), calcium (less calcium with rats compared to quail);
7. Radiograph; and
8. Endoscopy – *Aspergillus* spp., remove airsac worms (*Serratospiculum* spp.)

For the purposes of veterinary testing, birds can be divided into several groups:

1. Resident breeding birds - health screening prior to pairing
2. Fledging chicks - examination prior to hacking
3. Young adults returning from hacking
4. Competitive birds health evaluation before they leave
5. Birds returning from hunting as they re-enter the facility
6. Resident birds ongoing monitoring
7. New birds introduced from other owners

Veterinary profiling using the above tests can be used to advantage in these various groups

1. Resident breeding birds – health screening prior to pairing

For birds to breed successfully, they not only need to be basically well but need to be in 'breeding condition', ie free of disease, in a good environment and correctly fed. Sub clinical health problems manifest as lack of interest in breeding, delayed egg laying, small clutches, dead in shell youngsters, weak nestlings, lower weaning weights, and delayed weaning. In particular, the nutritional status of the hen directly impacts on the nutritional quality of the yolk available to the growing embryo and the quality of the egg generally. Healthy adults with strong immune systems pass their immunity to their chicks through the egg and in crop discharges in early life. Health problems that occur during breeding are hard to control once the birds are mated. There is no point in testing for introduced infectious disease such as PMV in long term resident birds. Similarly, invasive tests that may interfere with the bird's general sense of wellbeing should be avoided. Sakers in particular are very secretive and therefore there has to be a real reason to interfere. However, tests should be done to evaluate the individual health and nutritional status of breeders prior to pairing. Tests 1, 2, 3, 4 and 6 should

be considered.

2. Fledging chicks – examination prior to hacking

These birds originate from the facility and therefore should be well fed and disease free. Tests need to be non invasive because these birds are about to fend for themselves as semi-wild birds during hacking. Consider test 1. Further tests done at vets discretion based on clinical examination.

3. Young adults returning from hacking

These birds have been exposed to pathogens but tests must be non invasive because these birds are about to enter training. Consider tests 1, 3, 4, 5, 7 (due to poor correlation with number of *Serratospiculum* spp. eggs in droppings and number of adult worms)

4. Competitive birds - health evaluation before they leave for competition

For a bird to do well it comes down to its genetics, diet, health and training. Birds are not entered into competition simply to compete, but rather to win. To give of their best, the birds need to be healthy, fit, and motivated. In these birds, because they have been bred on site there should be no need to test for transmissible infectious disease and certainly invasive tests such as endoscopy should be avoided. Tests need to be done quickly with minimal disturbance to the birds. Any testing should be done as long as possible before competition so that there is plenty of time to treat any identified underlying health problem so that the birds can give it their best. Tests 1, 2, 3, 4 and 6 should be considered.

5. Birds returning from hunting as they re-enter the facility

These birds have an increased vulnerability to illness for two reasons.

- 1) The potential for exposure to infectious disease through exposure to other falcons and shared facilities and also prey species (bearing in mind that the easier to kill prey individuals are the weaker birds that may, in fact, be weak because they are sick)
- 2) As for the most part the same individual falcons are used in these competitions. There is the potential for multiple stresses to lead to immune-suppression and an increased vulnerability to disease . Travel, handling and confinement, altered feeding patterns, the exertion of competition, and the requirement to keep the bird at a flying weight and sometimes hungry are all potential stressors. The stimulus for a falcon to hunt is hunger. This means that a bird needs to be hungry to hunt effectively. If misjudged, hypoglycaemia can result leading to a general weakness in the bird. This is why it occasionally becomes necessary to administer oral glucose-based syrups or gluconeogenic drugs during competition in times of exertion. Oral glucose works very quickly not requiring digestion in birds, being passively absorbed through the lining of the proventriculus, often replacing energy and restoring vitality within 30 minutes.

The principle aim in testing these birds should be to prevent the introduction of infectious disease, but also as the birds are being handled it represents a good opportunity to evaluate their health generally. Tests 1-7 are appropriate.

6. Resident birds ongoing monitoring

Resident birds are checked on a daily basis and presented for veterinary examination when required. Tests are done on a needs basis.

7. New birds introduced from other owners

Not only do these birds have the potential to introduce infectious disease but as many of these would be older birds their current health is really a result of their general care, diet, and disease exposure through life. These birds could have problems as diverse as a chronic Aspergilloma, old injuries from hunting, or chronic nutritional problems. As these birds will be boxed on arrival, it represents an ideal opportunity for thorough testing. Tests 1-7 should be considered.

The practices and knowledge of falconry have come down to us through the ages. Today's falconers however realise the value of modern veterinary diagnostics and medications. Bringing the skills of the past and the knowledge of the present together can only lead to healthier birds and improved performance.